THE IRON TRADE REVIEW

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Increased Activity in Finished Products

Although Price Cutting is Reported on Sheets and Steel Bars— Blast Furnace and Steel Works Operations Continue to Expand

While the growing activity of the iron and steel trade is reflected by the gradually expanding operations of blast furnaces and steel works, nevertheless, price cutting, particularly on sheets and steel bars, indicates that the situation has not yet attained the strength to be presumed from a survey of the tonnage recently booked. Steel bar tonnage has recently been taken at 1.20c, Pittsburg, and it is reported that this price has been shaded on desirable contracts. An order for 2,800 tons of sheets for delivery through 1912 has been closed at a reported concession of from $3 to $4 a ton, and in view of the present activity of the sheet mills, this shading can only be attributed to the size and desirability of the order.

Mill Operations Increase

Both blast furnace and steel works operating capacity has been increased during the week. The American Sheet & Tin Plate Co. has started eight sheet and six additional tin mills and the plants of this company are now working at about 74 per cent of capacity. Steel Corporation wire mills are operating at about 73 per cent, and tube mill capacity has been increased to 64 per cent. The largest gains are being made by the mills in the Chicago district, with Pittsburg a close second. The Steel Corporation has also blown in two additional Ohio stacks and the active furnace capacity is now 65.7 per cent. This increase has been accompanied by a reduction of about 22,000 tons in the Corporation pig iron stocks in the week. The ingot capacity is now 72 per cent, a gain of two per cent since the last report. The Republic Iron & Steel Co. has fired two additional open-hearth furnaces, and the Cambria Steel Co. is operating all of its blast furnaces, in addition to increasing its Bessemer steel output. Preparations are being made to blow in another Duquesne furnace, and three additional open-hearths at Gary are to be started. Contracts for two blast furnaces for the Minnesota Steel Co., a Steel Corporation subsidiary, are about to be placed.

Pig Iron

Reports from all centers indicate broadened activity in pig iron, and while prices have not been advanced, the market is slowly developing increased strength. It is estimated that during the recent heavy basic buying movement, close to 100,000 tons were sold by Pittsburg and valley furnaces. That these large basic transactions have not materially affected prices is shown by the sale of 15,000 tons for delivery to Sharon, Pa., at approximately $13.25 per ton. In the east, inquiry is made for 5,000 tons of basic and a sale of 3,000 tons to a New England consumer is noted. Several southern furnace operators are endeavoring to establish a basis of $10.50, but until the large available tonnage of $10 iron is disposed of, their efforts will hardly prove successful. The largest inquiry for southern iron involves 20,000 tons for delivery through the first quarter. Cleveland and Cincinnati report increased activity in foundry grades.

Export Orders

Export tonnage continues heavy and in addition to 30,000 tons of rails for the Canadian Pacific, the United States Steel Products Co. has received an order for 20,000 tons of structural material for delivery to Canadian shops and 1,500 tons of line pipe for shipment to Japan. Other export sales include 7,000 boxes of tin plate, and 3,000 tons of rails for the Canadian Pacific which will be furnished by the Lackawanna Steel Co.

Structural Material

Increased building activity is reported from all sections of the country and so great is the pressure on the plants of the American Bridge Co. that it has been decided to rehabilitate the American works at Chicago and to increase the annual output to 35,000 tons. The tonnage of structural material recently placed has already strengthened fabricating prices, although some weakness continues in shapes. Chicago reports contracts aggregating 5,500 tons and some of the large orders closed, follow: Milliken Bros., 3,720 tons for transmission towers in the west; Richmond, Va., bank building, 2,800 tons; Weil warehouse, New York, 1,100 tons; Jacob Rupert Brewery, New York, 1,500 tons, and the Eastern Steel Co. reports contracts aggregating 1,000 tons. Large contracts pending include 8,000 to 10,000 tons for the Kansas City union station and 4,000 tons for the Aeolian building, New York.

Railroad Buying

It is estimated that 12,000 to 13,000 cars are involved in pending railroad inquiries. The Seaboard Air Line is in the market for 1,000 cars; Illinois Central, 2,000 cars; Monon, 1,000 cars, and the Wabash, from 500 to 1,000 cars. The Erie order for 3,800 cars has not yet been placed. Large pipe orders booked include 26 miles of 16-inch and five miles of 12-inch steel line pipe, and six miles of 3-inch tubing. Portland, Ore., is in the market for 3,000 tons of cast iron pipe, but the Detroit award for 11,000 tons has not yet been made. Ferro-manganese has been advanced and is now quoted at $37, tidewater.

WORLD'S IRON MARKETS

PITTSBURG

Mill Operations Increase to Meet Growing Demand.

Office of THE IRON TRADE REVIEW,
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The first of the midsummer months has passed without any noticeable slowing down in mill operations, as compared with June, which, with the exception of March, was the best month during the first half of the year, so far as the local iron trade is concerned. Despite the fact that many mills were closed for inventory and repairs and that orders were light early this month, local manufacturers report that mill orders for semi-finished steel, structural steel, rails, bars and sheets for July will show little, if any, decline as compared with June and two local companies report a decided gain in mill orders for steel bars in the month. Steel bars, structural steel and sheets are the most active branches of the trade, while the wire market is extremely dull. There has been little buying by the railroads this month, but considerable business from this source is expected in August, as more favorable reports are being made by the transportation companies. The Cambria Steel Co., Johnstown, Pa., is operating all of its eight blast furnaces and the Carnegie Steel Co. started two additional blast furnaces at its Ohio works. The American Sheet & Tin Plate Co. started eight tin mills at its American plant, Ellwood, Ind., and six sheet mills at the Aetna-Standard plant, Bridgeport, O., and is operating its sheet and tin mills at about 75 per cent of capacity. Orders for pipe placed by Pittsburg gas interests during the week include 26 miles of 16-inch steel line pipe, five miles of 12-inch steel line pipe, and six miles of 3-inch iron tubing. The coke market is quiet, but prices are firmer and a similar condition exists in the scrap market. There has been additional buying of pig iron, but the transactions have been handled quietly. Recent developments do not indicate that the recent heavy buying of basic pig iron has improved the price situation. A Pittsburg steel company last week bought slightly less than 1,000 tons of ferro-manganese for forward shipment at a low price, but all local dealers have been advised this week not to quote below $37, seaboard, for delivery over the remainder of the year.

Pig Iron.—The local pig iron market shows little change as compared with a week ago. There has been some trading in basic and foundry grades, but these transactions have been handled quietly and the details have not leaked out. Including the purchase of 62,000 tons of basic pig iron by the Republic Iron & Steel Co., it is estimated that from 90,000 to 100,000 tons of this grade have changed hands in the Pittsburg and valley districts during the past two weeks. Late developments indicate that, with the exception of the Colonial Steel Co., which is inquiring for from 4,000 to 7,000 tons of basic pig iron, consumers in this section are pretty well covered and that the buying movement for basic is over for the present at least. Late developments confirm statements made recently that buying of basic during the early part of the month was much heavier than reported at that time. It now develops that a Sharon, Pa., interest about 10 days ago closed for from 12,000 to 15,000 tons of basic for shipment over the remainder of the year. The price at which this iron is understood to have been sold, would not indicate any material improvement in the basic price, notwithstanding the recent heavy buying. The Colonial Steel Co. is expected to take definite action on its inquiry tomorrow. There has also been heavy buying of foundry grades, although several of the larger consumers have not closed. The Westinghouse Electric & Mfg. Co. is in the market for a round tonnage of foundry iron for shipment through the first quarter of 1912. One local seller reports sales of malleable and foundry iron aggregating 1,500 tons at current prices. A local interest is in the market for 1,000 tons of Bessemer and another company, which has been buying in the open market from month to month, is taking bids on 300 tons for August shipment. The Carnegie Steel Co. has started two additional furnaces at its Ohio works and five of the six stacks of that group are now active. The Cambria Steel Co. is operating all of its eight blast furnaces. In view of the fact that prices have not been thoroughly tested during the past week, we continue to quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$15.00
Bessemer, Pittsburg	15.90
Basic, valley	12.75
Basic, Pittsburg	13.65
No. 2 foundry, Pittsburg	14.40
Gray forge, Pittsburg	13.90
Malleable, Pittsburg	14.15

(Third Quarter.)

Bessemer, valley	$15.00
Bessemer, Pittsburg	15.90
Basic, valley	13.00
Basic, Pittsburg	13.90
No. 2 foundry, Pittsburg	14.40
Gray forge, Pittsburg	13.90
Malleable, Pittsburg	14.15

Ferro-Alloys.—Despite the fact that a local steel company last week purchased a round tonnage of ferro-manganese for fourth quarter shipment at about $36, seaboard, the market today is quotable at $37, Baltimore. Dealers in the Pittsburg territory have been advised not to quote below $37, Baltimore, for delivery over the remainder of this year. Inquiry is light. While there is little demand for 50 per cent ferro-silicon, this market is firmer and $53, Pittsburg, is being quoted as the absolute minimum.

We quote ferro-manganese at $37, Baltimore, for prompt and forward delivery. The freight rate from Baltimore to Pittsburg is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $53 to $53.50, Pittsburg, for prompt and forward delivery; 12 per cent, $25; 11 per cent, $24; 10 per cent, $23, f. o. b. Jisco and Ashland furnaces. The freight rate to Pittsburg is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—Competition for the plate tonnage involved in numerous small inquiries which have appeared during the past 10 days is very keen, and the quotation of 1.30c, Pittsburg, on desirable business is more general. The quieter tone in this market is due chiefly to the lack of buying on the part of the railroads. Including the inquiry of the Seaboard Air Line for 1,000 composite cars, which appeared this week, and that of the Erie railroad for 3,800 cars of various types, which has been up for some weeks, it is estimated that from 12,-

000 to 15,000 cars are involved in pending inquiries. It is not likely that any of this business will be placed until after Aug. 1. It is expected that about 10,000 tons of plates for two of the United States colliers, for which contracts were awarded late last week, will be rolled by a local mill. Despite the fact that very few car orders have been placed this month, one or two of the larger companies in this territory report that mill orders for plates in July will show only a slight falling off as compared with those of June. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.30c to 1.35c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.20c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including 3-16 inch plate on thin edge, 0.10c; under 3-16 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—Shipments of sheets are heavy for this season of the year, liberal specifications having been received from the consuming trade following the buying movement in June. The American Sheet & Tin Plate Co. this week started six additional sheet mills at the Aetna-Standard plant at Bridgeport, O., and is operating its sheet and tin plate mills at about 75 per cent of capacity. Practically all of the larger buyers of sheets are covered for the next two or three months at least, and in several instances contracts have been made for delivery over the remainder of the year. While all of the larger manufacturers are maintaining the openly quoted prices, concessions of at least $1 a ton have been made by some mills on shipments from stock. We quote the market as follows, with $1 a ton added as the delivered price in the Pittsburg district:

Blue annealed sheets No. 10 gage 1.50c; black annealed sheets No. 28 gage 2c; galvanized sheets No. 28 gage 3c; painted roofing sheets 1.40c per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets 2.55c per square for No. 28 gage, 2½-inch corrugation, f. o. b. Pittsburg.

Tin Plate.—The leading interest on Monday of this week started eight tin mills at its American plant, Ellwood, Ind., and is now operating more mills than for some months. New demand for tin plate is light, consumers having covered for last half requirements a few months ago. Consumers are specifying rather freely and some of the independent mills are running full time. We quote the market as follows:

Coke tin plate, 10-pound basis, 14 x 20, $3.70 f. o. b. mill, Pittsburg district.

Rails and Track Material.—Steel rail tonnage placed with the mills in this section during July was light, but operations are practically on the same basis as in June. Specifications are satisfactory and, as a number of the contracts made early in the year have been nearly filled, it is expected that some of the larger roads will re-enter the market shortly. The leading interest reports a very satisfactory week in standard and light rails, although individual orders were not large. New demand and specifications for railroad spikes are fair. We quote the market as follows, the base price on open-hearth rails being 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.16c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburg; track bolts, 2.25c, Pittsburg.

RAILROAD SPIKES.

4½, 5 and 5½ x ⅝	$1.50 to 1.55
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x ⅞	.20
3, 3½, 4 and 4½ x ⅝	.30
2½ x ⅜	.40
2½, 3 and 3½ x ⅝	.60
2 x ⅝	.80

Steel.—Despite the fact that very little new business was handled during the first two weeks of July, manufacturers of semi-finished steel in this territory state that mill orders this month will be about equal to those of June, which, with the exception of March, was the best month during the first half of the year. Two or three companies will show a gain in mill orders for sheet bars, although demand for billets is not quite as heavy as a month ago. There appears to be more general buying of billets and sheet bars, although individual orders are small. The Cambria Steel Co., Johnstown, Pa., is operating its open-hearth furnaces practically to capacity and has slightly increased operations in the Bessemer department. It is expected that two additional open-hearth steel furnaces of the Republic Iron & Steel Co.'s new plant will be started early next week. We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $21, with the usual extras for size and analysis, and open-hearth rolling billets, $21. Bessemer sheet and tin bars are quoted at $22, and open-hearth sheet bars are quoted at $22, f. o. b. Pittsburg or Youngstown, with full freight to destination added. Forging billets are quoted at $26, Pittsburg.

Hoops and Bands.—New business in hoops is practically normal and the market is firm at 1.40c, Pittsburg. Demand for bands is only moderate and the quotation of 1.25c, Pittsburg, has been shaded. We quote the market as follows:

Hoops in carload lots, 1.40c, Pittsburg; in less than carload lots, 1.50c; bands, 1.20c to 1.25c, base, with net extras, as per standard steel.

Merchant Bars.—There has been little change in the steel bar situation as compared with a week ago. Specifications against contracts are liberal and two or three companies are operating their steel bar mills to capacity. One company reports that mill orders in July will show a gain of from 80 to 90 per cent over June. It is generally understood that practically all of the larger consumers are covered by contract and there is not a great deal of new business appearing. The quotation of 1.20c, Pittsburg, is more general on prompt delivery business and this price is understood to have been shaded. Demand for bar iron is only moderate and manufacturers are not trying to force sales by offering concessions. Further improvement in shafting. We quote the market as follows:

Common iron bars, 1.30c, Pittsburg; Bessemer and open-hearth steel bars, 1.20c to 1.25c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3-inch, 1.35c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 60 per cent off in carloads and 55 per cent in less than carloads, delivered in base territory.

Muck Bar.—No important sales of muck bar have been made and inquiry is extremely light. We continue to quote the best grades of muck bar, nominally, at from $28.50 to $29, Pittsburg.

Structural Material.—There is a good demand for plain structural material and there appears to have been a slight improvement in fabricating prices during the past week. Contracts placed in the immediate Pittsburg district have been only for small lots. The American Bridge Co. has taken 2,800 tons for a bank building at Richmond, W. Va. There is a large amount of proposed structural work pending in the western Pennsylvania district and the indications are that structural steel mills and fabricating shops will operate on a more satisfactory schedule in August, as several fairly large awards likely will be made early next month. We quote the market as follows:

Beams and channels, 15 inches and under,

1.35c; over 15 inches, 1.45c; zees, 1.35c; tees, 1.40c; angles, from 3 to 6 inches, 1.35c; over 6 inches, 1.45c; universal and sheared plates, 6¼ inches wide and wider, 1.35c.

Merchant Pipe.—While this is regarded as the dull season for the market on pipe, specifications against contracts for iron and steel merchant pipe are fair and several awards for line pipe have been made. A Pittsburg gas interest has divided an order for 26 miles of 16-inch steel line pipe between two mills, and has also placed an order with a local company for five miles of 12-inch steel line pipe. Other awards made by local gas companies include 4 miles of 2-inch steel pipe and 5 miles of 3-inch iron tubing. It is understood that the National Tube Co. mills will furnish about 1,500 tons of line pipe for shipment to Japan. Several inquiries for line pipe for western shipment, noted recently, are still pending. Prices are fairly firm. We quote the following official discounts in carload lots, subject to the usual preferential discount to the larger buyers, merchant pipe, where specified, being offered in from ⅛ to 6 inches:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
		Butt weld.		
	Black.	Galv.	Black.	Galv.
⅛, ¼, ⅜ inch.....	72	58	68	54
½ inch	75	63	71	59
¾ to 1¼ inch.....	79	69	75	65
2 to 3 inches	80	70	76	66
		Lap weld.		
2 inches	76	66	72	62
2½ to 4 inches	78	68	74	64
4½ to 6 inches.....	77	67	73	63
7 to 12 inches.....	75	59	71	55
EXTRA STRONG, PLAIN ENDS.				
		Butt weld.		
⅛, ¼, ⅜ inch	69	59	65	55
½ inch	74	68	70	64
¾ to 1¼ inch	78	72	74	68
2 to 3 inches.....	79	73	75	69
EXTRA STRONG, PLAIN ENDS.				
		Lap weld.		
2 inches	75	69	71	65
2½ to 4 inches.....	77	71	73	67
4½ to 6 inches.....	76	70	72	66
7 to 8 inches.....	69	59	65	55
9 to 12 inches.....	64	54	60	50
DOUBLE EXTRA STRONG, PLAIN ENDS.				
		Butt weld.		
½ inch	64	58	60	54
¾ to 1¼ inch.....	67	61	63	57
2 to 3 inches	69	63	65	59
DOUBLE EXTRA STRONG, PLAIN ENDS.				
		Lap weld.		
2 inches	65	59	61	55
2½ to 4 inches.....	67	61	63	57
4½ to 6 inches.....	66	60	62	56
7 to 8 inches	59	49	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

Boiler Tubes.—New demand for iron and steel boiler tubes is extremely light, and, while there has been a slight gain in specifications, mill operations are still unsatisfactory and prices are irregular. We quote the following discounts on steel boiler tubes in carload lots to jobbers:

1¾ to 2¼ inch.....	65
2½ inch	67½
2¾ to 3¼ inch	70
3½ to 4½ inch.....	72½
5 and 6 inch	65
7 to 13 inch	62½

To destination east of the Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg. Usual extras to jobbers and boiler manufacturers.

Wire Products.—The wire market is seasonably quiet. Orders received during the past week have been chiefly for small lots. Buyers, realizing that prices are low, have endeavored to cover for their full requirements over the remainder of the year at current prices, but the larger mills are limiting contracts to 60 days. As is usually the case at this season of the year, mill operations are light. We quote the market as follows:

Wire nails, jobbers' carload lots, $1.70, retailers' carload lots, $1.75; cut nails (western makers), jobbers' carload lots, $1.60; painted barb wire, jobbers' carload lots, $1.70; retailers' carload lots, $1.80, with 30c for galvanizing; plain wire to jobbers in carloads, $1.50, and to dealers, in carloads, $1.55; polished staples, $1.70; galvanized staples, $2.

Wire Rods.—Odd lots of wire rods have been sold for prompt shipment at $27, Pittsburg, but new business is light, as most users are covered by contract. We quote $27, Pittsburg, on Bessemer and open-hearth wire rods.

Coke.—Consumption of coke during the past week shows a material increase over the early part of the month, with the result that practically all of the low-priced furnace coke for immediate shipment has been disposed of and prices are somewhat firmer. We note sales of spot furnace coke aggregating about 5,600 tons at $1.50, ovens. Several consumers who have been buying in the open market from month to month have not covered for their August requirements and probably will enter the market within the next few days. There has been no important buying of furnace coke for forward delivery. The foundry coke market continues extremely quiet, no important sales for prompt and forward deliveries having been reported. Prices are irregular. Production and shipments show a gain and the outlook is more favorable. We quote standard Connellsville furnace coke for prompt shipment at from $1.45 to $1.50, ovens, and for second half at from $1.60 to $1.70, ovens. On high grade Connellsville foundry coke we quote from $1.80 to $1.90, ovens, for prompt shipment and from $2 to $2.40, ovens, for shipment over the remainder of the year. The Connellsville *Courier's* figures for the week ending July 15 show 23,714 active ovens with an output of 270,700 tons, as compared with 23,933 active ovens and a production of 267,122 tons the previous week.

Old Material.—Consumption of old material is as heavy as at any time in some months, but on account of the contracts made at the beginning of the second quarter and the heavy stocks carried by consumers, there has not been a great deal of trading. However, dealers have not been able to obtain much tonnage at low prices as producers are not inclined to dispose of their holdings at present values. No particularly large sales were made during the week, but numerous sales of heavy melting steel, bundled sheet scrap and No. 1 cast scrap in small lots are noted. The minimum on bundled sheet scrap has been advanced 25 cents a ton and a similar advance is noted in quotations on machine shop turnings. Demand for low phosphorus is not very heavy and $16, delivered, Pittsburg, has been done. We quote, gross tons, delivered in the Pittsburg district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap	$13.00 to 13.25
Rerolling rails	13.50 to 14.00
Bund'ed sheet scrap	11.50 to 12.00
Iron axles	23.50 to 24.00
Old iron rails	15.50 to 16.00
Stove plate	10.50 to 10.75
No. 1 wrought scrap.....	13.50 to 14.00
Old car wheels	12.75 to 13.00
Low phosphorus	16.00 to 16.50
Machine shop turnings.....	9.50 to 10.00
Cast borings	9.25 to 9.75
No. 1 cast scrap	13.00 to 13.50
Malleable	13.00 to 13.50

CHICAGO

Concessions Reported on Structural Shapes, Plates and Bars.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, July 25.

The market in the west just about held its own during the past week. Rail orders show a falling off compared with the recent high points but specifications for plates, structurals, bars and sheets continue heavy. The price shading which is noted in several lines indicates that the situation has not yet attained the strength which a survey of the tonnage booked recently would indicate. Steel bars have been offered in this market by at least two independent interests on a basis of 1.20c, Pittsburg, and concessions amounting to $1 a ton are noted on both structurals and plates although not covering the full range of sizes. Nevertheless, considering the volume of business recently placed, coupled with that in prospect, there is no cause for anything but optimism in regard to the future. Timely and heavy rains in the Mississippi and Missouri valleys have

again "saved" the grain and corn crops and steel manufacturers need have no cause for anxiety over the agricultural situation in the west. About 5,500 tons of plain material will be required to cover fabricating contracts reported let in this market last week. The Illinois Central has issued an inquiry for 2,000 steel underframe box cars and the Monon is figuring on 1,000 steel gondola cars.

Pig Iron.—July will be remembered in pig iron circles for its low prices and also for a buying movement of moderate proportions. In Chicago the buying movement is lessening in force as mid-summer approaches and this is due partly to increasing difficulty in getting low priced iron. Some furnace interests that are in strong positions have taken enough low-priced contracts and temporarily at least have withdrawn from the market. The Tennessee Coal, Iron & Railroad Co. is holding to its price of $11, Birmingham, and another prominent producer in the south has announced that it will accept no business at less than $10.25. Nevertheless there is still plenty of iron to be had at $10 for the balance of the year. Buying for current consumption is light and most of the iron which has been contracted for recently is for future delivery. Buyers, however, have generally limited their contracts to tonnages based on their present rate of operation, and in case there is any marked increase in the foundry melt there will be considerable further buying for immediate shipment during the third and fourth quarters.

The following prices represent the market for Chicago delivery, except northern foundry No. 2 and malleable Bessemer made in local furnaces, which are quoted f. o. b. furnace:

(Shipment this year.)

Lake Superior charcoal	$17.00
Northern foundry No. 2	14.50
Southern foundry No. 2	14.35
Southern silveries, 5 per cent silicon	16.35
Jackson Co. silveries, 8 per cent	18.40
Malleable Bessemer	14.50
Alabama basic	14.60

Billets.—Inquiry for forging billets is moderately good and sales during the past week were fair. Prices are somewhat ragged and independent mills are shading the official quotations. The Corporation is not meeting the low prices, but is maintaining $28.60, Chicago, on forging billets. We quote as follows, f. o. b. Chicago: Open-hearth forging billets, $27.50 and re-rolling billets, $23.60.

Merchant Bars.—Steel bars are irregular in price and at least two independent mills represented in this territory have made quotations recently on a basis of 1.20c, Pittsburg. No large tonnages have been sold during the past week since most of the agricultural implement business has been placed. The Steel Corporation is maintaining its price on bars and as a result is losing some business. Specifications and current orders are good and the mills are operating at a fairly satisfactory capacity. Low prices still prevail on re-rolled, hard steel bars. Shafting is quiet. There has been practically no change in the bar iron situation since the previous report; makers are comfortably supplied with business, but excessive mill capacity, and caution on the part of buyers, are combining to hold down the price.

We quote, Chicago delivery, as follows:

Bar iron, 1.20c to 1.25c; hard steel bars, rerolled, 1.20c to 1.25c; soft steel bars and bands and small shapes, 1.38c to 1.43c, base; hoops, 1.63c to 1.68c; smooth finished machinery steel, 1 inch and larger, 1.83c. Shafting 60 per cent off list for carload lots, 55 per cent off for less.

On iron and steel from local stock we quote as follows:

Bar iron, 1.80c to 1.90c per pound base; soft steel bars, 1.65c to 1.75c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—The volume of fabricating contracts is holding up very well. The Gary plant of the American Bridge Co. is now operating and has a well-filled order book. Fabricating prices are hardening slightly, while at the same time softness is noted in quotations on plain material. Light beams and shapes have been offered in this market at 1.48c, or on a basis of 1.30c, Pittsburg; this does not apply to the full range of sizes and no great volume of business is affected; nevertheless, the existence of some shading must be recognized. Fabricating contracts awarded in this market last week total 5,460 tons including several reinforced concrete structures in which considerable steel will be used. The St. Paul Bread Co., St. Paul, Minn., has let contracts for a reinforced concrete bakery that will require 790 tons of steel; a stable for the Fitger Brewing Co., Duluth, Minn., reinforced concrete, will take 120 tons and a 700-foot reinforced concrete bridge, to be built by Santa Barbara county, California, will contain 400 tons. Milliken Brothers have been awarded contracts for transmission towers, 3,720 tons, by the Nevada-California Power Co., fabricating contracts for the State Museum, Denver, Colo., 300 tons, and for asylum buildings at Medical Lake, Wash., 130 tons, have been let to the American Bridge Co.

We quote structural material f. o. b. Chicago, as follows:

Beams and channels, 15 inches and under, 1.48c to 1.53c. For extras, see Pittsburg report.

Plain material out of store is as follows:

All angles, 3 inches and larger, including 6 inches, $1.75 to $1.85 per 100 pounds; angles over 6 inches, $1.85 to $1.90 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.75 per 100 pounds, base; channels, 3 inches and larger, $1.75 per 100 pounds, base.

Rails and Track Fastenings.—The past week was uneventful in point of new business, although specifications continue heavy. Orders for standard rails taken by the Illinois Steel Co. totaled less than 5,000 tons in scattering lots. There is sufficient business on the books, however, to keep the mills running for some time and the outlook for further business is very encouraging. Specifications for track fastenings and light rails are moderate. The rail mills at South works are operating at capacity, but the Gary mill is running at somewhat less than its maximum.

We quote light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 40 to 45-pound, 1.16c to 1.20½c; 30 to 35-pound, 1.19½c to 1.24c; 16, 20 and 25-pound, 1.20½c to 1.25c; 12-pound, 1.25c to 1.29½c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.65c to 1.75c; smaller size spikes, 1.70c, base; track bolts with square nuts, 2.10c to 2.20c, base.

Plates.—The July output of plate mills in this territory will be heavy. Business is coming in at a good rate, although some smaller mills, which cannot roll a full range of sizes, are making concessions, generally $1 a ton, in order to get business. The Illinois Central has issued an inquiry for 2,000 steel underframe box cars and the Monon is preparing specifications for 1,000 steel gondola cars. Swift & Co. are in the market for a few additional tank cars and the Cold Blast Transportation Co., Chicago, expects to buy 100 tank cars. The St. Louis & San Francisco railroad is in the market for 19 coaches, 12 chair cars, three passenger and baggage cars and three mail and baggage cars.

We quote mill prices f. o. b. Chicago, as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.75c to 1.85c.

Store prices are as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches wide, 1.48c to 1.53c. For extras, see Pittsburg report.

Sheets.—There has been very little

change in the sheet situation in the west in the past week. Orders are moderately good and prices are being well maintained. Stocks in the hands of consumers are unusually low and many orders are accompanied by urgent requests for immediate shipment. Western manufacturers will extend contracts at today's prices until the first of next year.

For mill prices, see Pittsburg report. Freight to Chicago, 18 cents.

We quote store prices, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 2c; No. 12, 2.05c. Box annealed, No. 28, 2.65c. Galvanized, No. 28, 3.55c.

Wire Products.—Recent rains, which have been heavy throughout the Mississippi and Missouri valleys, have done much to insure good crops and the improved agricultural outlook is being reflected in better orders for fencing, barb wire, etc. The demand for nails remains somewhat limited. Manufacturers are coming into the market for wire products rather freely.

We quote f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.88; retailers' carload lots, $1.93; retailers' less than carload lots, $2.03; painted barb wire, jobbers' carload lots, $1.88; retailers' carload lots, $1.93; retailers', less than carload lots, $2.03, with 30c for galvanizing; plain wire to jobbers, $1.68; plain wire, retailers' carload lots, $1.73; staples, bright, $1.88.

Merchant Pipe and Tubes.—There has been very little change in the pipe and tube situation during the past two weeks. Orders are fair and prices are reasonably firm. The demand for pipe is better than for boiler tubes. In some cases price concessions are being granted by tube mills.

We quote merchant pipe and tubes out of store, Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
⅛-¼ inch	69.2	54.2	63.2	48.2
⅜ inch	72.2	59.2	66.2	53.2
2 in. to 3 in.	77.2	66.2	72.2	61.2
4½-6 inches	74.2	63.2	69.2	58.2
7-12 inches	71.2	54.2	67.2	50.2
Extra Strong Plain Ends.				
⅜ inch	70.2	63.2	54.2	52.2
2-3 inches	75.2	68.2	61.2	55.2
7-8 inches	65.2	....	59.2	47.2
Double Extra Strong.				
½ inch	58.2	50.2	....	....
2-3 inches	63.2	55.2	....	....
7-8 inches	53.2	41.2	....	....

Tubes.

	Lap weld steel. Per cent.	Charcoal iron. Per cent.	Shelby seamless. Per cent.
1 inch	39	..	57½
1¼ to 2¼ inch	55	40	35
2¼ to 3¼ inch	62½	50	46

Cast Iron Pipe.—The pipe market is rather quiet in the middle west and no orders of consequence have been placed since the Detroit letting reported last week. Bids will be opened at Portland, Ore., Aug. 1, on 3,000 tons of water pipe and it is probable that a part of this tonnage will go to the Oregon Iron & Steel Co. On account of the heavy business which the pipe makers have enjoyed all this year, prices are very firm. We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $25.25; 6 to 12 inches, $24.50, larger sizes, $24; gas pipe, $1 a ton higher.

Old Material.—A number of railroad lists have been issued recently. The Chicago, Rock Island & Pacific will open bids July 28 on 3,000 tons of scrap including 400 tons of No. 1 steel rails and 400 tons of No. 1 railroad wrought. The C., M. & St. P. opened bids, July 25, on 1,375 tons of various grades of old material including 300 tons of old steel rails and 200 tons of No. 2 railroad wrought. Offerings of re-rolling rails have been very heavy and the price is soft. In general, there is a little more activity in the Chicago scrap market and slight advances in prices are noted in some instances.

We quote for delivery in consumers' yards, Chicago, as follows:

GROSS TONS.

Old car wheels	$12.75 to 13.25
Old iron rails	14.50 to 15.00
Rerolling rails (5 ft. and over)	12.25 to 12.75
Old steel rails (3 ft. and under)	11.25 to 11.75
Frogs, switches and guards	10.25 to 10.75
Heavy melting steel	**10.50 to 11.00**
Shoveling steel	9.90 to 10.40

NET TONS.

No. 1 R. R. wrought	$11.00 to 11.50
No. 2 R. R. wrought	10.00 to 10.50
Arch bars and transoms	**13.75 to 14.25**
Knuckles, couplers and springs	10.00 to 10.50
Shafting	15.00 to 15.50
Iron car axles	17.75 to 18.25
Steel car axles	16.00 to 16.50
Locomotive tires	16.00 to 17.00
Dealers' forge	**9.50 to 10.00**
Pipes and flues	8.00 to 8.50
No. 1 cast	10.75 to 11.25
No. 1 busheling	8.75 to 9.25
No. 2 busheling	6.75 to 7.25
No. 1 boiler cut	7.50 to 8.00
Boiler punchings	12.50 to 13.00
Cast and mixed borings	5.25 to 5.75
Machine shop turnings	**6.50 to 7.00**
Railroad malleable	10.00 to 10.50
Agricultural malleable	9.25 to 9.75
Angle bars, splices, etc., iron	12.00 to 12.50
Angle bars, steel	10.00 to 10.50
Stove plate and light cast scrap	9.25 to 9.75

Foreign Rail Trade

There has been very little fresh business passing in steel rails, new inquiries being at a minimum, but a moderate amount of business is awaiting decision, including 35,000 tons for South Africa, 31,000 tons for West Australia, 20,000 tons for Victoria, 20,000 tons for Siam, and 6,500 tons for New South Wales. The Queensland order for 54,000 tons of 42's and 65's has been placed with the Workington Iron & Steel Co.—*The Ironmonger*, London.

Few Ore Shipping Orders Being Placed by Furnacemen.

Office of THE IRON TRADE REVIEW,
Penton Building, July 25.

Iron Ore.—During the past week blast furnace operators placed orders for 200,000 tons or ore. This, however, is scarcely a drop in the bucket, and if more orders are not forthcoming in the immediate future, the lake season bids fair to have a very early finish. Vessel owners say that they would rather tie up their vessels in winter moorings and save insurance than wait around for possible cargoes. No demand has developed for wild tonnage and shippers have about all they can do to keep their own boats busy. Were it not for the brisk coal trade, many vessels would have no employment at this time.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—Beside having closed a contract for 60,000 tons of basic with the Republic Iron & Steel Co. and bought 120,000 tons of Mesabi non-Bessemer ore, the Struthers Furnace Co. has booked 15,000 tons additional. It is preparing to relight its stack in two weeks. It is understood that the Struthers company sold its iron to the Republic company at $13.50 a ton, and bought the ore at the current market price of $3.50. Three-fourths of the iron will be delivered by Jan. 1 and the ore deliveries have been commenced. Considerable quiet buying of foundry iron is reported in and around this city, and one Cleveland company figures it will have booked 30,000 tons of this grade by Aug. 1. A West Side foundry supply concern is inquiring for 1,000 tons of southern No. 2 iron. Makers in this locality express confidence in the immediate future, although prices have shown no change. We quote, delivered in Cleveland, as follows for the remainder of the year:

No. 1 foundry	$14.50
No. 2 foundry	14.25
No. 2 southern	14.35
Gray forge	13.25
Bessemer	15.90
Lake Superior charcoal	17.50
Jackson Co. 8 per cent silvery	18.00

Coke.—While the general market for both furnace and foundry grades is still dull, yet at least one furnace company is negotiating for last half

requirements, and is expecting to buy at about $1.60. We quote:

Connellsville furnace coke, $1.40 to $1.50 for prompt delivery, and $1.60 to $1.80 for second half, Connellsville foundry coke, $1.80 to $2 for prompt, and $2.15 to $2.35 for second half.

Finished Material.—The city hall commission has rejected all bids on the 3,500 tons of structural material because of alleged irregularities, and announces that it will re-advertise with 30 days. The city is completing specifications for 300 tons for a proposed draw in the Central viaduct. Mill agencies report specifications coming along in fairly satisfactory volume. Steel bars in this district are reported strong at 1.25c Pittsburg whereas about 10 days ago some weakness was reported. The same condition is reported in rolling billets. Sheets are still showing weakness in some gages. Some Cleveland makers are reported to be offering concessions on boiler rivets, and it is known here that at least one member of the nut and bolt association (not located in this city) has withdrawn its membership, alleging dissatisfaction with the association management.

Old Material.—A slightly better demand is noted for heavy steel and turnings in this market. But holders of melting steel, even in tonnages of 1,000 tons, manifest no interest in any bids offered at this time. The Nickel Plate list closed Monday and almost all of the stock went to consumers and at comparatively fancy prices. For instance, the heavy steel in the small quantity offered brought $13.05 a ton, and the other material in proportion. There is more of a demand for relaying rails in this city and the price has been raised $1 a ton. Turnings are in demand but the supply today is limited. We quote, gross tons, f. o. b. Cleveland, as follows:

Old iron rails	$15.00 to 15.50
Old steel rails (under 6 ft.)	12.50 to 13.50
Old steel rails (over 6 ft.)	12.50 to 13.00
Relaying rails	**20.00 to 21.00**
Old car wheels	12.00 to 12.50
Old steel boiler plate	10.00 to 10.50
Malleable iron (railroad)	11.75 to 12.00
Steel axles	19.00 to 19.50
Axle turnings	9.00 to 9.50
Malleable iron (agricultural)	11.00 to 11.50
Heavy steel	**12.50 to 13.00**
Country mixed steel	9.00 to 9.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$12.00 to 12.50
No. 1 busheling	11.00 to 11.50
No. 1 machine cast	11.50 to 12.00
No. 1 dealers' wrought	11.50 to 12.00
Machine shop turnings	**8.00 to 8.50**
Pipes and flues	8.00 to 8.50
Wrought drillings	**8.00 to 8.50**
Stove plate	9.50 to 10.00

The J. G. Brill Co., Philadelphia, has declared the regular quarterly dividend of 1¾ per cent on preferred stock, payable Aug. 1.

CINCINNATI

Increased Demand for Pig Iron for Forward Shipment.

Office of THE IRON TRADE REVIEW, 808 Provident Bank Bldg., July 25.

Pig Iron.—A little more buying appears to have developed during the week, and while largely limited to small lots, it gives the market a better tone. The number of small inquiries pending aggregate quite a tonnage, most of which will be closed within the next few days. It now develops that a great many more buyers will be in the market for iron during the last quarter of the year than seemed probable a short time ago. Prices are practically unchanged. One of the large southern producers, however, is declining to quote for fourth quarter business, at present figures, although southern iron is obtainable from a number of furnaces on a $10, Birmingham, basis for shipment the remainder of the year. Sales of 1,500 tons of Jackson county silvery and 1,500 tons of analysis iron were made to a Michigan melter, deliveries covering the last half of the year. A melter in this territory purchased 2,500 tons of southern, No. 2 soft, shipments covering the balance of the year. An Indiana concern is asking for quotations on 100 tons of southern, and 300 tons of either northern or southern for the balance of the year, or will contract for one year if necessary. A Michigan melter is inquiring for 1,500 tons of southern, No. 2, and 300 to 500 tons of high silicon iron for last half delivery. It is rumored that the leading pipe interest closed for a round tonnage during the week, but figures are not obtainable. An Illinois melter bought 1,000 tons of southern charcoal iron at quotations which are said to range from $22 to $22.50, Birmingham. About 2,000 tons of malleable went to an Indiana melter, and 1,000 tons of No. 4 foundry to a concern in northern Ohio. We quote prices based on a freight rate of $3.25 from Birmingham and $1.20 from Ironton, as follows:

Southern foundry No. 2	$13.25
Southern foundry No. 3	12.75
Southern foundry No. 4	12.50
Southern gray forge	12.00
Mottled	12.25
Southern No. 1 soft	14.70
Southern No. 2 soft	14.20
Standard southern car wheel	25.50
Northern No. 2 foundry	14.20
Northern No. 3 foundry	13.70
Northern No. 4 foundry	13.20
Jackson county 8 per cent silicon	16.95

Coke.—The market for both furnace and foundry grades is quiet and without special feature. All contracts for the foundry supply for last half delivery have practically been placed, and little is being done in furnace coke outside of spot requirements. Prices appear to be holding fairly well, and are said to be unchanged. Specifications for foundry coke on contracts are satisfactory. Quotations in the leading coke producing districts, follow:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.00 to 2.25	$2.00 to 2.40
Furnace coke	1.50 to 1.65	1.65 to 1.75
Wise county district:		
Foundry coke	2.00 to 2.25	2.00 to 2.25
Furnace coke	1.75 to 2.00	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.00 to 2.15	2.00 to 2.35
Furnace coke	1.60 to 1.75	1.75 to 1.85
New river:		
Foundry coke	2.50 to 3.15	2.60 to 3.25
Furnace coke	2.10 to 2.15	2.10 to 2.20

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16 2-3 per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—A fair volume of business is reported, particularly in structural material, which is said to show some improvement. The contract for the Gilbert avenue viaduct will probably be awarded to the Kaps-Brehm Concrete Co., the lowest bidder. This will require about 700 tons of steel. Prices are unchanged.

Old Material.—The market is quiet and dull. Railroad lists issued during the week have been small. Contract shipments are fairly satisfactory, but are not of sufficient volume to clear dealers' yards. Prices are unchanged, as follows:

GROSS TONS.

Old iron rails, gross	$14.00 to 14.50
Old steel, rerolling, gross	13.00 to 14.00
Old iron axles, gross	19.25 to 19.75
Steel melting scrap, gross	11.00 to 11.75
Car wheels, gross	11.50 to 12.50

NET TONS.

Old No. 1 R. R. wrought	$12.25 to 12.75
No. 1 machinery	10.50 to 11.00
No. 1 busheling	9.25 to 9.75
Stove plate	7.75 to 8.25
Machine shop turnings	6.50 to 7.00
Cast borings	5.50 to 6.25
Grate bars	7.25 to 8.00
Sheet scrap, bundled	8.00 to 9.00
No. 1 cast scrap	10.00 to 11.00
Heavy turnings	7.75 to 8.75

Inspector's Report.—In his report for the year 1910, issued a few days ago, John C. Delaney, chief factory inspector of Pennsylvania, stated that his deputies had inspected 13,219 industrial establishments where 1,003,705 persons were employed. The department notes 2,682 accidents in establishments under its supervision and 188 deaths by accidents in such plants.

The Inland Steel Co., Chicago, declared a dividend of 1¾ per cent, payable Sept. 1.

Pig Iron Shows Good Volume—Cutting on Bars and Sheets.

July 25.

Philadelphia and the southeastern markets are still responding very gradually to any improvement in conditions. Eastern steel works operators record only slight gains and occasional losses. The finished market shows evidence of keen competition among makers and bars and sheets seem to be suffering the most. Steel bars in this territory have been quoted rather freely in competition at 1.20c, Pittsburg, and lower in exceptional cases, while black sheets have been cut $3 to $4 on large contracts, it is reported. Optimistic statements continue to be made of eastern shipbuilding prospects. A more general buying of pig iron is giving this market an aspect of gathering strength. Scrap is without particular feature.

Pig Iron.—With the small buyer predominating, the pig iron market in Philadelphia and surrounding territory is holding to a broadened activity and while prices are no higher, the indication is more clearly one of increasing strength and encouragement. Foundry consumers are entering the market quite freely for their next several months' requirements, and their plan of buying exhibits greater soundness in conditions in that there is little speculation and purchases usually cover work under contract. Virginia iron especially has been moving more freely. During the past 10 days one of the leading makers in that district has sold 15,000 tons or more of foundry grades largely for western shipment. In addition, Virginia pipe makers have been closing more liberally for low grade iron, having taken this week from furnaces in that territory probably 4,000 to 5,000 tons of forge and off casts, including one lot of about 3,000 tons for shipment to begin immediately. The Virginia lower grades are selling at $11.50, furnace, or higher, and it is reported some No. 2 iron has gone at $12, furnace, though generally makers are holding for $12.25, furnace. Pipe makers in this district continue to sound the market for round lots of forge and lower silicon and one of their consumers this week bought about 2,000 tons of southern off basic at from $13.75 to $14, delivered. A little buying has been done in standard mill forge around $14, delivered, by the rolling mills. Eastern Pennsylvania regular foundry brands are quotable at $15, delivered, Philadelphia, but this price is sometimes shaded on some brands. The Delaware, Lackawanna & Western railroad closed this week for 1,000 tons of 2X and 500 tons of No. 1 for forward delivery at Scranton, Pa., on the basis of $14.60, furnace, for 2X at Buffalo, the iron to come from that district. Little has been done in basic this week, but it continues apparent that the minimum of the eastern market is $14.50, delivered. A lot of 3,000 tons of basic, deliveries to begin at once, was purchased this week by a New England consumer from eastern Pennsylvania makers at a price equivalent to about $14.50, delivered in this territory. One eastern Pennsylvania steel works is still in the market for 5,000 tons or more. Low phosphorus iron is quiet. The large Warwick furnace at Pottstown will blow in during the next week.

We quote for prompt and third quarter delivery in Philadelphia and vicinity, as follows:

No. 1X foundry	$15.25 to 15.50
No. 2X foundry	15.00 to 15.25
No. 2 plain	14.50 to 15.00
Standard gray forge	14.00 to 14.25
Basic	14.50 to 14.75
No. 2X Virginia	15.05 to 15.30
No. 2 southern	14.00 to 14.50
Standard low phosphorus	20.50 to 21.00

Finished Material.—Trade improvement with eastern steel makers is still only moderate in scope. Generally, there is a better volume of demand but mill operations are benefiting from it only slightly, and range from 55 to 70 per cent of steel works capacity. Sentiment among buyers, as shown by their interest in certain products, though some of it informal, is more promising and this condition also applies to the railroads, but as yet their buying has not shown any marked growth. Frog and switch manufacturers report a better business from the railroads.

Greater optimism continues to be expressed over the outlook for shipbuilding work for the yards along the eastern seaboard. Very cheerful statements in this regard are being made by those associated with the shipbuilding industry, but little of the work has yet reached the contract stage. It is estimated by shipbuilders that there is $5,000,000 to $6,000,000 of new construction in merchant vessels now being figured upon in the east, in addition to several times this sum of government work in sight rebuilding a number of torpedo boat destroyers and two battleships. This is exclusive of the final contracts placed by the government this week, awarding two colliers each to the Maryland Steel Co. and the Newport News Shipbuilding & Dry Dock Co., and two seagoing tugs to the New York Shipbuilding Co., which call for a total of 23,000 to 24,000 tons of shapes and plates. The New York Shipbuilding Co. inquired of eastern mills this week for 1,000 to 1,500 tons of shapes and plates for the two tugs. The plates for the Maryland Steel Co. boats will come from the Central Iron & Steel Co.

Some eastern shape makers report the volume of business entered this month is less than in June. The Pencoyd plant of the American Bridge Co., this city, however, continues to run very full, and has several months' work ahead of it. Fabricated awards of the week include 2,800 tons to the American Bridge Co. for the First National Bank building, Richmond, and 460 tons to the Massillon Bridge & Iron Works for the McElhattan, Pa., highway bridge. Several Philadelphia contracts of size are still pending.

The eastern billet market shows more contracting for forward requirements. Miscellaneous sources of supply, such as shipyards, locomotive shops, bridge shops, etc., are specifying with eastern plate mills in a way that enables the latter to maintain their operations as they have been for a month past.

In the export market an oil company has closed a contract for 7,000 boxes of tin plate from the largest maker at considerably under the domestic schedule.

We quote for delivery in Philadelphia and vicinity, as follows:

Structural shapes, 1.50c; steel plates, 1.50c; steel bars, 1.35c to 1.40c; refined bar iron, 1.27c to 1.32c; cut nails, $1.75 to $1.80; blue annealed sheets, No. 10 gage, 1.65c; 4 x 4-inch open-hearth rolling billets, $24.40; forging billets, $28.40.

Bars.—Buyers of steel bars in Philadelphia and vicinity are apparently having no great difficulty in obtaining quotations of 1.20c, Pittsburg, on desirable and sizable business open to competition. Further quotations upon this basis were made in this territory the past week. In cases of especially preferred tonnage, below 1.20c has been done, but these instances are not numerous. The eastern bar iron market still shows a scant volume of business and 1.20c, mill, is being done. In the case of one mill, which recently shut down, doubts are entertained whether it will ever again be operated.

Sheets.—Some price irregularity is to be noted on black sheets in eastern territory and the regular schedule of

quotations, it is reported, has been cut as much as $3 to $4 a ton in recent cases of especially desirable contracts. An eastern powder manufacturer has closed at concessions for his requirements of No. 28 and No. 30 gage black sheets for the balance of this year and through 1912, aggregating about 2,800 tons. Sheet mills in this district are being kept well engaged by small orders as buyers are taking their requirements in a hand to mouth style. There have lately, however, been several cases in which customers have been buying for stock, which is something they have not been doing for some time.

Old Material.—With a good many of the largest consumers comfortably covered for their forward requirements, the market is bare of tonnage transactions, but a little better tone has been brought to the situation by some increase of interest in grades which have been very slow. Some of the foundries are showing more direct interest in the heavy cast market and are more carefully sounding out the possibilities of profitable purchase. But little buying has yet been done, however. Iron rails, which have been of nominal quotations, were sold this week in small lots at $17.25, delivered, which fixes the market above the level recently attributed to this grade.

We quote, gross tons, delivered in eastern Pennsylvania and New Jersey territory, as follows:

Old iron rails	$17.25 to 17.75
Old steel rails (rerolling)	13.75 to 14.25
No. 1 heavy melting steel	13.00 to 13.50
Old car wheels	13.00 to 13.50
Old steel car axles	18.00 to 19.00
Old iron car axles	24.00 to 25.00
No. 1 R. R. wrought	15.50 to 16.00
Wrought pipe	12.50 to 13.00
Cast borings	8.25t o 8.75
Wrought turnings	9.00 to 9.50
Heavy cast scrap	13.00 to 13.50
Railroad malleable	11.50 to 12.00
Stove plate	10.00 to 10.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa., and $1.20 to Harrisburg and Steelton, Pa.

The Pawling & Harnischfeger Co., Milwaukee, has recently issued a profusely illustrated, 48-page booklet, describing its plant and various styles of traveling cranes, hoists and other apparatus for economically handling materials. The pages are 6 x 9 inches and each department of the plant is described in detail. The illustrations show some very interesting installations of I-beam trolleys and electric traveling cranes in various classes of service.

The Cambria Steel Co. has declared the regular quarterly dividend of 1¼ per cent, payable Aug. 15.

NEW YORK

Continued Heavy Demand for Structural Material—Pig Iron Quiet.

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., July 25.

Iron Ore.—The eastern ore situation presents no developments of interest. Foreign ore shipments are keeping up to about their accustomed level, but it is probable that the receipts of Cuban ore will be less this month than last, owing to the increased tonnage imported in June. It is reported that an important eastern mine, operated by a steel interest, is about to be shut down, owing to the large accumulations of this ore.

Pig Iron.—The market lacks features of any interest, but there seems to be more buying by the smaller melters, which is accepted as being favorable, as these purchasers are usually represented as covering orders for castings and specialties actually on hand. Prices also seem to be holding more firmly to announced schedules, which follows from the better tonnage on the books of those makers who were inclined to make drives for business. There are some reports of irregularity in Virginia prices, but these seem to be due largely to sales of low grade iron, of which, in some cases, extra efforts have been made to clean up yards. Such sales have been done down to $11.50, furnace. The leading Virginia maker, however, continues to quote on regular foundry grades at $12.25, furnace, for No. 2. The Buffalo market is apparently holding quite evenly at the recent advances and further instances of fair sized lots of competitive iron being taken at $13.50, furnace, for 2X the past week are to be noted. Sizeable tonnages have been exceptional the past week in inquiry or sales, but several fair lots have been taken by eastern buyers. A special machinery interest closed for 2,500 tons of Nos. 1 and 2X for last quarter shipment to two New England plants, the iron going to Buffalo furnaces. A New England textile machinery builder bought about 2,000 tons of foundry grades for last half shipment and this business is understood to have gone largely to Virginia furnaces at full prices. A report that a Harrisburg pipe interest has bought an additional lot of 5,500 tons of basic is not confirmed, and this statement has apparently been confused with several purchases of this buyer previously reported. A New England basic consumer this week took 3,000 tons of this grade from eastern Pennsylvania furnaces for early shipment on the basis of $14, furnace, or slightly less. We quote for prompt and third quarter shipment as follows:

Northern foundry No. 1	$15.00 to 15.50
No. 2X foundry	14.75 to 15.25
No. 2 plain	14.50 to 14.75
No. 2 Virginia	15.05 to 15.30
No. 2 southern foundry	14.00 to 14.50
Malleable	15.00 to 15.25
Gray forge	14.00 to 14.25

Ferro-Alloys.—All the principal English makers of standard ferro-manganese have advised their representatives on this side that former prices are withdrawn and that quotations for prompt and future are now held at $37, Baltimore. As far as learned, no business has yet been done at this new level, and the presence of some material in second hands may offer some limited opportunities for trading below this price, but such a condition will probably not long prevail. The advance in the market follows closely the reports which have caused considerable discussion, of new low levels having been established, referring particularly to the sale of 800 tons for last quarter to a Pittsburg steel maker. It is well established that as low as $36, Baltimore, was done in some cases prior to the advance, which has been attributed to re-sale material. There is not much inquiry in the market at present. Fifty per cent ferro-silicon is also reported to be a little stronger, some sales having been made recently at $53, Pittsburg. We quote, nominally, 80 per cent ferro-manganese at from $36.50 to $37, Baltimore, for prompt or forward shipment and 50 per cent ferro-silicon at from $52 to $53, Pittsburg.

Cast Iron Pipe.—As far as the eastern makers who bid upon the business have learned, no award has yet been made of the 11,000 tons for the city of Detroit, upon which R. D. Wood & Co., Philadelphia, are the reported low bidders. Bids went in this week on 500 tons for Norwood, Mass. Taunton, Mass., will take bids July 28 on 225 tons. A fair tonnage continues to come out from miscellaneous sources and makers are fairly busy. Eastern plants, especially in the Delaware river district, are melting quite heavily. We quote 6-inch pipe at from $21 to $21.50, f. o. b. New York.

Finished Material.—The market continues to manifest a slow but perceptible movement toward improvement. The tonnage coming out in practically all lines is gradually broadening and though there is an absence of marked betterment, specifications

against contracts are being received more satisfactorily. The sheet and tin plate mills seem to be running at the highest percentages of capacity. As has been the case, the increase of business seems to be more pronounced with the subsidiaries of the United States Steel Corporation than with the independent companies generally, and particularly so in the east.

Due to the large tonnage some of these interests have been booking, the question of making prompt deliveries on new fabricated work is becoming a greater problem for some of the largest companies in this line. The American Bridge Co. has a very large tonnage on its books and its plants are now running very full. The way in which a number of the leading shops are filling up with work is expected to exert considerable influence in hardening the low fabricating prices prevailing, but there is still a good deal of idle shop capacity. The railroads are not placing very much structural tonnage in the east. Pending inquiries aggregate 2,000 tons, including 1,000 tons for the Chesapeake & Ohio.

The Weil warehouse at Greenwich and Lafayette streets, this city, 1,100 tons, has gone to the Hay Foundry & Iron Works. This contract was previously reported as having been taken by another interest. The Eastern Steel Co. has 400 tons for mine buildings for the Benson Mines Co., Benson Mines, N. Y.; Barber & Ross, Washington, D. C., 360 tons, for Public School No. 163 in that city; the Fort Pitt Bridge Works, 250 tons, for several small bridges for the Boston & Maine railroad. The Pennsylvania railroad has placed several small bridges, two of them, of about 120 tons, going to the Pennsylvania Steel Co., and one of 100 tons to the Phoenix Iron Works. The Geo. A. Just Co. will fabricate 1,500 tons for a brew house for the Jacob Rupert Brewery, this city. This company was reported as having the general contract for the work. It is reported that the Rochester station of the New York Central railroad, about 1,000 tons, has gone to local contractors, but the steel has not yet been placed.

Bids went in this week on 8,000 to 10,000 tons for the Kansas City Union Station; on 4,000 tons for the Aeolian building, this city; on 400 tons for the R. H. McDonald loft on Nineteenth street, this city; on 1,200 tons for the New York Telephone building, Thirty-seventh street, this city. The Old Dominion Line piers, Norfolk, Va., 4,000 tons, and the additions to the Bellevue hospital, 1,200 tons, and to St. Anthony's hospital, 600 tons, both this city, are still pending. Decisions are pending on a number of loft and apartment buildings, this city, upon which bids have been entered. This includes the McKeon loft, West Twenty-fifth street, 900 tons; the Edendale Construction Co. apartment at Ninety-first street and Central park, 650 tons; the Cambridge apartment, Seventy-eighth street and West End avenue, 500 tons; and the McMorrow Construction Co. apartment, 143rd street and Broadway, 500 tons. Mulcahy & Gibson have 400 tons for a loft at Counties Slip and Water street.

In the export market, the United States Steel Products Co. has taken 20,000 tons of structural material for delivery to Canadian shops. The same interest has also taken 1,500 tons of line pipe for the Tokio Gas Co., Tokio, Japan, which will be furnished by the National Tube Co. The export trade continues active. We quote for delivery at New York tidewater and vicinity, as follows:

Angles, 3 to 6 inches and heavier, 1.51c; tees, 3 x ¼ inch and heavier, 1.51c; plates, tank, carload, 1.51c; boiler steel, 1.61c; marine boiler, 1.91c; bar iron, 1.30c to 1.35c; soft steel bars, 1.36c to 1.41c.

Bars.—A large Buffalo consumer has just closed a contract for its extended requirements calling for about 30,000 tons of steel bars. It is understood that the business has gone to eastern mills. While considerable current business continues to be taken at the regular 1.25c, Pittsburg quotation, the 1.20c price is not uncommon on desirable competitive business, especially in eastern territory, and in some few cases of preferred tonnage, this level has been cut. Trade in common iron bars is rather quiet and prices are irregular, ranging from 1.30c to 1.35c, New York.

Rails and Track Material.—It is now officially confirmed that the order for 30,000 tons of rails for the Canadian Pacific Railroad has been taken by the United States Steel Products Co., and that these rails will be rolled by the Illinois Steel Co. There were some reports in the market regarding this order that it might finally be placed with Canadian makers, but the mills of the latter continue to be filled up so heavily with business that considerable of the current tonnage is being diverted to this country. The Lackawanna Steel Co. has also taken 3,000 tons from the Canadian Pacific railroad. A current report that the Chicago, Milwaukee & St. Paul has placed 40,000 tons of rails, refers to a contract closed and reported a number of weeks ago. These rails were divided between several makers and are now being specified.

Old Material.—Eastern scrap buyers continue to be interested in the market in only a moderate way, as their purchases at the ruling quotations are usually in small lots. There continues a considerable shipping movement against old contracts, particularly in heavy steel, as eastern mills apparently are consuming increasing quantities. These buyers, however, are not very much inclined to make new contracts and some of them are not offering over $13, delivered. We quote gross tons, prices New York dealers will pay at tidewater, with the exception of cast scrap, which has a local demand, as follows:

Old car wheels	$11.25 to 11.50
Old iron axles	17.50 to 18.00
Old steel shafting	14.00 to 14.50
No. 1 heavy melting steel	11.00 to 11.25
No. 1 R. R. wrought	12.00 to 12.50
Iron track scrap	11.00 to 11.50
Wrought pipe	9.75 to 10.25
Cast borings	6.25 to 6.50
Wrought turnings	6.50 to 7.00
Heavy cast scrap	11.50 to 12.00
Railroad, malleable	10.00 to 10.50
Stove plate	8.75 to 9.00
Grate bars	9.00 to 9.50

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York, and to Roebling N. J., $1.00 from Jersey City and $1.50 from New York.

BUFFALO

Pig Iron Demand Declines, But Prices Are Firm.

July 25.

Pig Iron.—Only a small tonnage of pig iron was purchased by consumers in this district during the week, although a little iron was sold outside, mostly in car load lots and a few small sales were made into Canadian territory. Inquiries also show a falling off. The failure of buyers to come into the market is attributed to the stiffening of prices. With the possible exception of a little gray forge, no iron can now be bought in the Buffalo district at $13. Representatives of the furnaces say that the foundries are much busier. Shipments are going forward well. Prices remain unchanged. We quote, f. o. b. furnace, as follows:

No. 1X	$13.75
No. 2X	13.50
No. 2 plain	13.25
No. 3	13.25
Gray forge	13.00 to 13.25
Malleable	13.50 to 13.75
Basic	13.25 to 13.75
Charcoal	16.50 to 17.50

Finished Products.—There has been

practically no change in the market in the past week. Structural material continues active, and bars and other general lines are normal. Some large structural awards that were to have been made have been deferred.

Old Material.—Few sales are reported and the market continues dull with little sign of improvement. We quote, gross tons, f. o. b. Buffalo, prices being largely normal:

Heavy melting steel	$12.75 to 13.00
No. 1 railroad wrought scrap	14.75 to 15.25
No. 1 railroad and machine cast scrap	14.00 to 14.50
Old steel axles	18.50 to 19.00
Iron axles	23.00 to 24.00
Car wheels	13.75 to 14.25
Railroad malleable, scrap	13.75 to 14.00
Machine shop turnings	7.00 to 7.25
Cast iron borings	6.50 to 6.75
Low phosphorus steel scrap	17.00 to 17.50
Old iron rails	16.75 to 17.25
Tank iron	10.75 to 11.25
Sheet iron	6.50 to 7.00
Pipes and flues	10.75 to 11.25
Stove plate	12.00 to 12.50
Grate bars	11.50 to 12.00
Boiler plate	11.50 to 12.00

ST. LOUIS

Fair Pig Iron Inquiry Aroused Interest—Some Structural Business.

July 24.

Pig Iron.—A well-authenticated report today that a large St. Louis corporation is inquiring for 10,000 tons of iron has aroused much interest. The grade of iron wanted could not be determined, some insisting it was No. 2 and 3 southern, while others are equally confident the inquiry is for basic. The time of delivery is said to be the first of next year. With this exception, the market was about as dull last week as it has been for quite awhile. Orders have been very few and only for small lots.

Prices on Southern iron, delivered, to which the Birmingham freight of $3.75 has been added, remain nominally as follows:

Southern No. 1	$14.25 to 14.75
Southern No. 2	13.75 to 14.25
Southern No. 3	13.50 to 14.00
Southern No. 4	13.25 to 13.75

Coke.—Orders are limited to small shipments, and there is not a large inquiry in the market. There seems to be a stiffening in prices, however, but for the present quotations remain as follows:

We quote 72-hour Connellsville foundry grades, $1.90 to $2.40 for whole of 1911; 72-hour foundry, $1.90 to $2.15 on tracks and for immediate delivery; 48-hour Connellsville furnace, $1.40 to $1.50; best 72-hour Virginia foundry, $2 to $2.25; 48-hour Virginia furnace, $1.60 to $1.85. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—The board of public improvements of this city has asked for bids on about 7,000 tons of structural steel to complete the Illinois and Missouri approaches to the municipal free bridge that will span the Mississippi river. Bids will be received at the city hall, St. Louis, Aug. 15. Bids will soon be asked for structural steel for the 22-story department store and office building to be erected on the site of the Barr Dry Goods Co., St. Louis. The Kansas City Southern Railroad Co. placed an order last week for about 250 tons of structural material for a new depot at Fort Smith, Ark. Standard rails, light rails, track fastening and bars were in very little demand.

Old Material.—Buying remains at a low ebb, with prices unchanged as follows:

Old car wheels	$12.50 to 13.00
Old iron rails	13.50 to 14.00
Rerolling rails (4 ft. and over)	12.00 to 12.50
Old steel rails (2 ft. and under)	11.00 to 11.50
Light section relayers, 45 lb. and under, subject to inspection	19.50 to 22.00
Relaying rails, subject to inspection	24.00 to 24.50
Frogs, switches and guards	11.50 to 12.00
Heavy melting steel	11.50 to 12.00
Shoveling steel	11.00 to 11.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.00 to 11.25
No. 2 R. R. wrought	10.00 to 10.25
Arch bars and transoms	13.25 to 13.50
Knuckles, couplers and springs	12.00 to 12.50
Shafting	14.25 to 14.50
Iron car axles	18.00 to 18.50
Steel car axles	17.00 to 17.50
Locomotive tires	14.00 to 14.50
No. 1 country wrought	9.50 to 10.00
Pipes and flues	8.00 to 8.50
No. 1 busheling	9.25 to 9.50
No. 2 busheling	6.00 to 6.50
Cast and mixed borings	5.00 to 5.50
Machine shop turnings	6.50 to 7.00
Railroad malleable	9.50 to 10.00
Agricultural malleable	8.50 to 9.00
Stove plate	9.00 to 9.50
Angle splice bars, iron	11.75 to 12.25
Angle splice bars, steel	11.00 to 11.50

San Francisco

Considerable Structural and Rail Business in Prospect.

July 20.

Pig Iron.—Supplies of pig iron appear to be ample for current needs, prices remaining about the same as heretofore. A shipment of 650 tons of Chinese pig was received recently by Girvin & Eyre and is being sold in small lots. We quote:

Southern No. 2	$ 21.00
English	21.00 to 23.00
Continental	20.00 to 20.50
Chinese	20.50

Finished Material.—While the contracts being let or in prospect are small the volume of structural business amounts to considerable. The recent lettings are as follows: American Bridge Co., 300 tons for Pacific Portland Cement Co. at Suisuin, 250 tons, Gladding McBean, and 1,200 tons new Masonic Temple, San Francisco; Pacific Rolling Mills, 300 tons, Pantage theater, Bankers' Investment Co. building, 700 tons, San Francisco Investment Co.'s building, 300 tons; Palm Iron Works, Sacramento, 200 tons for D. O. Mills Bank building. Figures will soon be taken for a steel bridge for Butte county, the Knights of Columbus building, and several large buildings to be erected at Sacramento. Beams and channels from store are quoted at 2.50c.

Little change is noted in soft steel bars, reinforcing material moving fairly well at the old prices. A large order of round bars has been placed by the city of Los Angeles and several large oil reservoir projects will call for a moderate tonnage of bars for reinforcing. The Pacific Coast Steel Co. has announced its intention of manufacturing soft steel bars at its South San Francisco works which are expected to be in operation within the next sixty days. Bars from store are quoted: Iron 1.90c, steel 2.00c.

There is a light revival in the plate trade, a number of contracts in the islands and the north being placed here.

BIRMINGHAM

Fair Pig Iron Tonnage Being Negotiated.

Birmingham, Ala., July 24.

Pig Iron.—Producing interests are making an effort to establish higher prices, especially for deliveries during the last half of this year. Quotations on last quarter shipments have, in some cases been advanced to a basis of $10.50 for No. 2 foundry, and $10.25 for No. 2 foundry is being quoted on shipments in the third quarter. The sale of 1,500 tons of No. 2 and No. 3 foundry, for shipment over the remainder of the year, is reported on the $10.50 basis, but the brand involved usually commands a higher price than prevails for other grades. Small lots of from 50 to 200 tons for comparatively early shipment sold during the week at $10.50 for No. 2, and a lot of 500 tons of No. 3 for third quarter shipment was sold at $9.75 per ton. It is believed, however, that a sufficient tonnage is still to be had on the basis of $10 per ton to meet the present demand for shipment over the remainder of the year. The sale of 1,000 tons of No. 2 soft for last half delivery has been reported on the $10 basis. It is reported that little or no trading has yet been done in iron for delivery after the first of the year.

METAL MARKETS

St. Louis.

July 24.

Lead and Zinc.—A top price of $43 a ton was paid for choice grades of zinc blende in the Missouri-Kansas-Oklahoma district last week on an assay base of $41.50 for 60 per cent metallic contents, ranging down to $40 a ton. The base was $41.59 on contract figured on the average East St. Louis spelter price of $5.54 for the previous week. Spelter is strong today, having gone to 5.65c. The surplus blende in the district is about 7,500 tons, a diminution of almost 6,000 tons in the last few months. Prices of calamine are unusually firm at $21 to $23 a ton on an assay base of 40 per cent qualities, while choice lots brought $27 last week. Lead ore was firm and in fair demand at $57 to $59.50 a ton last week, and in some quarters $60 was reported.

New York

July 25.

Tin.—Liberal buying of future tin in the London market has been the feature of the past week. While it is not definitely known that the syndicate is responsible for the accumulation of three months contracts which has been going on for some time, a strong impression has been made on the local trade that such is the case. Compared with July 20 the London closing today is £2 15s lower for spot, and £1 5s higher for three months. Spot closed at £190 5s, and three months at £187. Local tin business has been only moderate. Small sales were made yesterday and today at 41.75c for spot and August, while September is 41.37½c. Tin arrivals since July 1, aggregate 4,615 tons and there are 1,465 tons afloat. It is likely that arrivals before Aug. 1, will bring the total for July up to 5,000 tons.

Copper.—The feature of the copper metal situation in this country has been the large shipments for export during July. Today's custom house returns, and previously reported shipments aggregate 24,841 tons. This good export movement has been the main support to the domestic market this month, as domestic consumers bought heavily in June, and have not come into the market extensively since. Prices have been cut from 7½ to 12½ points by some independent sellers the past week, but the important interests have not pressed sales. The latter display considerable confidence in the near future, and believe domestic consumers will in a short while be forced to replenish their stocks. Lake copper is quoted at 12.75c to 12.87½c and electrolytic 12.62½c to 12.75c. For small lots those prices can be shaded ⅛c.

Lead.—Business in pig lead has improved and the market has a strong tone. Among outside sellers 4.50c and 4.57½c in New York has been done recently. The American Smelting & Refining Co. continues to quote 4.50c for shipment.

Spelter. — Apparently producers' stocks have not altogether recovered from the large buying that took place in June. There is only a moderate demand for the metal, and yet the price is well maintained. Prime western is held at 5.75c in New York.

Antimony.—There is no change in the antimony situation. Cookson's is 8.50c, Hallett's is 8c, and Hungarian is 7.25c.

Chicago.

July 25.

New Metals. — The metal markets were dull and nominal in the west during practically all of last week. Lead is higher and is now quoted 4.47½c, Chicago. Spelter is practically unchanged in price and at the high quotations now prevailing consumers are buying sparingly. Tin is lower, being quoted at 42½c, Chicago.

We quote dealers' selling prices, f. o. b. Chicago, as follows:

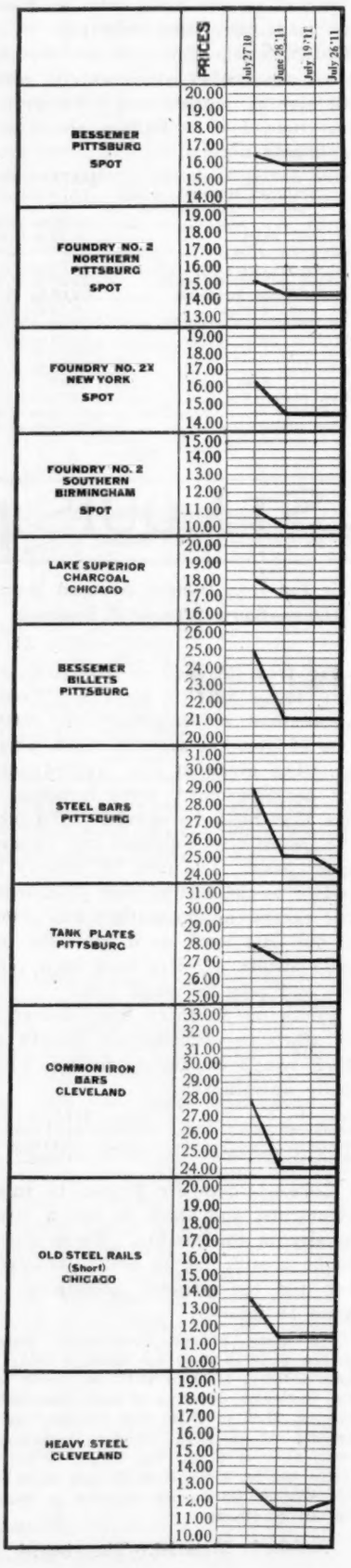
Lake copper, carload lots, 13c; casting, 12¾c; smaller lots, ¼c to ⅜c higher. Spelter, car lots, 5.60c to 5.65c; lead, desilverized, 4.47½c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $7.50 list, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 42½c; Cookson's antimony, 10c; other grades, 9c to 10c.

Old Metals.—The market for old metals is steady and has shown no changes of importance in the past two weeks. Business is only fair.

We quote dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, 12½c; heavy copper, 12c; light copper, 10½c; heavy red brass, 10½c; heavy yellow brass, 9¼c; light brass, 7c; No. 1 red brass borings, 9½c; No. 1 yellow brass borings, 7½c; brass clippings, 8½c; tea lead, 3.80c; lead scrap, 4½c; zinc, 4½c; tin pipe, 39½c; tin foil, 38c; pewter, 27c; electrotype plates, free from wood, 4c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; linotype dross, 3¼c; prime slab zinc dross, $70 per ton.

PRICE CHART



WORKS ABSORBED

By Lebanon Valley Iron & Steel Co. Which Also Increases Capital.

As a result of its recent increase in capital stock from $1,000,000 to $2,000,000, which was made possible by the introduction of New York and Philadelphia capital, the Lebanon Valley Iron & Steel Co., Lebanon, Pa., has made official announcement of the extensive enlargement of its East Lebanon and Lebanon plants and the absorption of the Duncannon Iron & Steel Co., Duncannon, Pa., which was recently purchased by the Light interests of Lebanon. These improvements, when completed, will double the capacity of the Lebanon Valley company in the production of bolts and nuts, while the Duncannon plant with its proposed additions, will give employment to 500 men, thus bringing the total number of men employed by the absorbing company up to 1,500.

The additions to the central plant at Lebanon include two new factories in which 200 new machines will be placed, thus increasing the present output of bolts and nuts to 200 tons per day and that of railroad spikes to 50 to 60 tons per day. A new 8-inch finishing mill will also be erected at the East Lebanon plant and two additional finishing mills at the Duncannon plant, bringing the output of bar iron of the two mills combined up to 350 tons daily. All these new improvements will be begun at once, and the nail factory at the Duncannon plant, which has been idle for some time, will be put into operation as soon as arrangements can be made to do so.

The Duncannon Iron & Steel Co., which is absorbed in this merger was built in 1836. It was partly destroyed by fire in February, 1904, but was immediately rebuilt. It was sold at a receiver's sale in March, 1910 to James G. Leiper Jr., of Philadelphia, but about a year and a half ago was purchased by Lebanon interests represented by Simon P. Light and H. H. Light, both of whom are connected with the Lebanon Valley Iron & Steel Co. The plant consists of 44 puddling furnaces, 9 heating furnaces, 6 trains of rolls (two 18-inch puddle and one 8, one 12, one 16 and one 20-inch finishing) and 50 cut-nail machines. Its product is bar iron and iron and steel cut nails, the annual capacity being 20,000 tons of bar iron and 125,000 kegs of nails.

The new stock recently subscribed will be represented in management by newly elected directors who are as follows: Wm. C. Sproul, Chester, Pa.; Felton Bent, Philadelphia; George L. Plitt, Baltimore, Md., and Burrows Sloan, Philadelphia. The officers of the Lebanon Valley Steel Co., as it now stands merged are: President, H. H. Light; vice president, Felton Bent; treasurer, S. P. Light and secretary, William H. Davis.

Official Changes Made in Machinery House

Following the meeting, July 24, of the board of directors of Manning, Maxwell & Moore, Inc., New York, announcement was made that Henry Evans, president of the Continental Insurance Co. and the Fidelity Phoenix Insurance Co., had been made chairman of the board. A short time ago, Mr. Evans was elected a director. In a statement, Mr. Evans says that he assumed the office at the urgent request of his friend and relative, Chas. A. Moore, president of the company, who is now abroad, but expected to return to America in the fall. There has been no change in the ownership of the stock, Mr. Moore retaining his controlling interest. At the meeting the resignation of Colby M. Chester Jr., as secretary and treasurer, was accepted and J. H. Evans, son of the late Sir Francis Evans, of England, was chosen his successor.

Sheet & Tube Co. Increases Capital to Build Mills

Stockholders of the Youngstown Sheet & Tube Co., Youngstown, O., on Tuesday voted to increase its capital stock from $10,000,000 to $15,000,000 by issuing $5,000,000 of 7 per cent preferred stock, the outstanding $10,000,000 being common stock. The additional capital will be expended in building an open-hearth steel plant containing six furnaces, a blooming mill and one merchant mill at the beginning. Plans for the additions were drawn a year ago by Julian Kennedy. The stockholders also voted to make to employes the same profit sharing distribution as last year, 5 per cent on the pay roll, or a total distribution of $223,000, and to continue the profit sharing plan another year.

The Buckeye Steel Castings Co., Columbus, O., has declared a quarterly dividend of 1½ per cent on both its common and preferred stock, both payable Aug. 1.

WIRE MEN FINED

By New York Judge—Others May Change Their Pleas.

Judge Archbald, in the United States district court at New York, July 25, imposed fines ranging from $1,000 to $1,700, respectively, on 37 out of the 83 officials of wire manufacturing concerns who were indicted on June 29 on charges of violating the Sherman anti-trust act. The fines were imposed after the 37 indicted individuals had submitted pleas of nolo contendere, the plea being considered a practical admission of guilt. The acceptance of the pleas was vigorously opposed by United States District Attorney Wise, who argued against the precedent. The sentence pronounced by the court was the payment of a fine of $1,000 and costs in each separate case, with the provision that where a fine of $1,000 had been imposed on a defendant in one case, the fine for each additional case should be $100.

The defendants whose pleas were accepted and the amounts of their fines are as follows:

$1,700—F. W. Roebling.
$1,500—Frank J. Newberry, Joseph W. Marsh, William A. Conner, Philip H. Smith.
$1,400—Charles J. Marsh, Frank N. Phillips, Charles R. Remington Jr.
$1,200—Thomas F. Ryman, John C. Bridgman, Henry D. Ashley.
$1,100—W. F. Fields, Alfred F. Moore, John H. Mason, Alfred A. Cowles, Russell A. Cowles, Thomas Wallace, Louis Anschutz, Joseph C. Belden, Edward L. Frisbie Jr., Thomas B. Kent, C. Edward Murray, A. M. Dickinson, Karl Roebling, Antoine Bournonville, Charles A. Morss.
$1,000—Newell B. Parsons, James A. Doughty, George B. North, Robert W. Sieberling, Robert E. Lucas, R. Eccleston Gallaher, William H. Hall Jr., Ralph Watrous, George L. Bowen, Everett Morse, Frank M. Potter Jr.

It is expected that other indicted manufacturers will take similar action and that some who originally pleaded not guilty may change their pleas.

Is Low Bidder

Pittsburg, July 26. (By wire.)

The McClintic-Marshall Construction Co., Pittsburg, is the low bidder on the construction of spillway gates, caissons and foot bridges for Panama canal work, aggregating about $340,000.

The Bessemer Coke Co. has awarded contracts for 200 new coke ovens to be built near Masontown, Pa., from plans prepared by Frank E. Gebhart, chief engineer of the company.

Frank L. Scamman of Redding, Cal., has received the contract for a new steel bridge to be built at Fall River Millie, Cal., the contract price being $7,980.

COMPARISON MADE

Between Tariff Law and Canadian Reciprocity Duties.

Washington, D. C., July 24.

In the nation-wide discussion, on the rostrum and in the press, anent the absorbing topic, reciprocity with Canada, it would be supposed that every phase of the much-worn problem had been worked out to its very last analysis. The president has so centered his desire upon this one piece of legislation as to make it the notable historical achievement of his administration and upon which he will demand a renomination and election; page after page of the *Congressional Record*, for months, is covered with remarks delivered on the floor of the national senate and house; gallons of ink and miles of typewriter ribbons have been used up in addressing millions of public documents to more or less admiring constituents; volume after volume has been printed containing the testimony of witnesses who have journeyed to Washington to tell what will be the effect of this legislation upon the farmer, merchant, manufacturer, lumberman, publisher, packer, fisherman and laborer; with the one notable exception. Strange as it may seem, the bibliography of Canadian reciprocity appears to contain no reference, however slight, to the probable effect which it will have upon the iron and steel industry of the United States. It is, therefore, impossible to reflect the views of the various statesmen, writers and witnesses, in forecasting the results of this breach in the tariff wall.

H. B. 4412 does not per se offer radical tariff changes in articles manufactured from iron and steel, although the few items on which the tariff act of 1909 are changed, for the benefit of Canadian manufacturers, show reductions in most cases. For instance, on portable engines with boilers, horsepower and traction engines for farm purposes, hay loaders, potato diggers, fodder or feed cutters, grain crushers, fanning mills, hay tedders, field rollers, manure spreaders, weeders, and windmills, the new Canadian rate is 20 per cent ad valorem, while the former rates and the existing rates with other countries are, on steam engines 30 per cent and on all machinery not otherwise specified 45 per cent. On cutlery, plated or not, pocket knives, penknives, scissors and shears, knives and forks for household purposes, and table steels, the "reciprocal" rate is 27½ per cent, whereas the rates under the act of 1909 range from 40 per cent to 65 per cent. Basins, tubs, sinks and other plumbing fixtures come from Canada under a 32½ per cent rate, while imports from less favored nations pay a revenue of 60 per cent. The new law also reduces the rates on automobiles and other motor vehicles of Canadian manufacture from 45 per cent down to 30 per cent, and the same on certain iron parts of pulp-making machinery.

The "free list" includes rolled iron or steel sheets or plates, 14-gage or thinner, whether galvanized or coated or not, on which the rate has been 35 per cent plus 0.007c per pound; crucible cast-steel wire, valued at not less than 6c per pound, which has been yielding a rate of 35 per cent plus 0.01½c per pound; galvanized iron or steel wire, curved or not, Nos. 9, 12 and 13 gage, which formerly paid 35 per cent and 0.002c per pound; typesetting and typecasting machines, which formerly paid 30 per cent; barbed fencing wire or iron or steel, galvanized or not, which used to cost 0.0075c; coke, at a sacrifice of 20 per cent; and rolled wire rods in the coil, of iron or steel, not over ⅜ inch and not smaller than No. 6 gage, on which a duty of 35 per cent plus 0.01c per pound. The act provides that the same articles from this country shall be received into Canada free of duty.

While these reductions are material, the simple fact of their having been made on a few articles of metallic content will not precipitate a panic among producers of the base metals; but let no one suppose that the act entitled "An Act to Promote Reciprocal Trade Relations with Canada" stops at that. A deeper significance attaches to the iron and steel business in this connection, than appears in the slight amendments to schedule C.

NEW PLATE MILL

Will be Erected by Republic Iron & Steel Co.

Work has been started by the Republic Iron & Steel Co. on the new 90-inch plate mill at Lansingville, O., in the Youngstown district. The contract for the engine to drive this mill was awarded to the William Tod Co., Youngstown, some time ago, and the contract for the tables, etc., has been awarded to the United Engineering & Foundry Co., Pittsburg. The new plate mill will be located between the new open-hearth steel plant, which was completed recently, and the new structural mill now in course of erection. The two buildings now being erected for the structural and plate departments are 200 x 1,500 feet.

RECEIVERS NAMED

For Platt Iron Works on Application of Certain Creditors.

The Platt Iron Works Co., of Dayton, O., on application of certain creditors has been thrown into bankruptcy court and two receivers have been appointed to take charge of its affairs. The president of the company, Joseph B. Reichman, filed an answer admitting the inability of the concern to pay its debts until collection could be had on large sums that have been uncollectible up to the present time.

The company succeeded the Stilwell-Bierce-Vaile Co. about three years since, and including the life of the latter company has been in business for about thirty years. The company manufactures pumps, water wheels, compressors, heating apparatus, oil machinery, etc., and its plant covers 25 acres. The property account filed shows the following: Realty and buildings, valued at $618,178.92; machinery and equipment, $570,201.90; patterns and drawings, $654,381.31; flasks, $51,389.04; tools, $145,463.86. There is on hand raw material and work in process of completion valued at upward of $450,000 and nearly $400,000 unfilled orders. Receivers George R. Young and Dixon Boardman are given authority to run for thirty days with possible longer extension if advisable.

St. Louis Shipments

Receipts and shipments of pig lead and spelter at St. Louis for the last two weeks were as follows:

	Zinc and spelter.	Pigs of lead.
Receipts:—		
For week ending July 15.....	75,320	37,500
For week ending July 22.....	83,380	57,330
Shipments:—		
For week ending July 15.....111,220		38,570
For week ending July 22.....114,310		19,210

The Wisconsin Iron & Wire Works, 186-188-190 East Water street, Milwaukee, experienced an estimated loss of $15,000 July 21, when fire badly damaged the left wing of its plant. The loss is nearly all covered by insurance. G. H. Norris is president of the company and C. W. Norris is vice president and secretary.

The Wheeling Corrugating Co., Wheeling, W. Va., will open a branch office on Sept. 1, at Tenth and Hickory streets, Kansas City, Mo. H. J. Morgan, formerly assistant manager at St. Louis, will have charge of the new office.

PLATE POOL AGREEMENT

Discussed by Stanley Committee Witnesses

All Copies Recalled When Found to be Illegal—Wire Rope Association Testimony

Washington, D. C., July 25.

The agreement entered into by the members of the Steel Plate Association of the United States on Nov. 9, 1900, submitted to the Stanley investigating committee, provided for the distribution of the steel plate tonnage among the members on the following basis: Carnegie Steel Co., Pittsburg, 46.25 per cent; Jones & Laughlin, Ltd., Pittsburg, 4.75 per cent.; Illinois Steel Co., Chicago, 11 per cent.; Crucible Steel Co. of America, Pittsburg, 4.50 per cent; Otis Steel Co., Cleveland, 2.50 per cent; Tidewater Steel Co., Chester, Pa., 3 per cent; Lukens Iron & Steel Co., Coatesville, Pa., 7.50 per cent; Worth Bros. Co., Coatesville, Pa., 7 per cent; Central Iron & Steel Co., Harrisburg, Pa., 8 per cent; American Steel & Wire Co., Chicago, 5.50 per cent; Glasgow Iron Co., Pottstown, Pa. to the extent of sales up to 40,000 tons, should this company be able to accomplish them, prior to Dec. 31, 1901.

Payment for Excess Tonnage.

The officers of this association included a president, treasurer, commissioner and an executive committee consisting of six members. It was provided that monthly statements should be rendered by each member of the association to the commissioner, of all the tonnage shipped during the month. Each member shipping during the month more than its percentage of the total amount shipped by all the members of the association was to be charged the sum of 0.35 cent per pound for such excess and each member not shipping its percentage of the total amount shipped by all members of the association should be credited with a sum of 0.35 cent per pound. Checks for this indebtedness were to have been forwarded to the treasurer to the order of T. Mellon & Sons, Pittsburg, where it was to remain to the credit of the member paying on excess of shipments and being increased or diminished by the report of each succeeding month's business. The agreement also provided that it was the privilege of each member not having shipped his full perecntage to call, through the commissioner, on the member making an excess, to transfer to the short member a sufficient amount of tonnage to enable him to fill up his order book. It was the intent of the agreement that each member should ship his entire percentage and at the end of the year the agreement provided that it was the duty of the commissioner to so arrange between the members as to have the pool balanced.

Guarantee Fund.

The agreement further provided that to insure the rendering of the statements and faithful adherence of each party to its terms, a guarantee fund of $100,000 shou'd be formed on or before Dec. 3, 1900, by the payment of $1,000 by each member for each per cent of allotment. To cover orders already taken, the following tonnages were exempt: Carnegie Steel Co., 140,000 tons; Jones & Laughlin, Ltd., 9,400 tons; Illinois Steel Co., 15,394 tons; Crucible Steel Co. of America, 2,687 tons; Otis Steel Co., 1,740 tons; Tidewater Steel Co., 2,520 tons; Lukens Iron & Steel Co., 5,770 tons; Worth Bros. Co., 3,863 tons; American Steel & Wire Co., 15,116 tons, and Glasgow Iron Co., 7,965 tons.

Penalties.

Provisions were also made for imposing penalties for a violation of this agreement, this authority resting in the brokerage or commission was to be paid to any one on the sales of plates after Jan. 1, 1901.

J. R. Van Ormer, general sales manager of the Lukens Iron & Steel Co., Coatesville, Pa., testified that within a few days after the agreement was sent out all copies were recalled and he believed they were all returned, unsigned and burned, because the pool was found to be an illegal combination. W. C. Temple, of Pittsburg, was the commissioner of the association.

W. S. Mitchell, cashier of the Mellon National Bank, Pittsburg, submitted a certified copy of a ledger account of his bank with W. L. King, treasurer of the plate association, showing deposits to the amount of $241,833.13, and he testified that the account was opened Feb. 2, 1901, and closed Jan. 30, 1902.

Wire Rope Association.

R. C. Richmond, general sales manager of the Waterbury Co., of New York City, testified that up to 1905 or 1905 his company belonged to what was known as the Wire Rope Association. The Waterbury company withdrew from the association, however, Jan. 1, 1907. Frederick W. Lehmann, solicitor general of the United States, testified that he has had occasion to examine the contracts between the members of the Wire Rope Association and that they all resemble the copy of the Steel Plate Association in the following respects: (1) Providing for an apportionment of business; (2) providing a deposit as guaranty fund; (3) requiring reports or statements to be filed; (4) containing provisions as to a minimum price; (5) imposing fines for breach of contract. The copies which the solicitor general had seen were unsigned. Carlisle T. Woodhall of Claridge & Woodhall, Baltimore, testified that he bought wire rope from the Trenton Iron Co., but was not restricted as to selling price by the manufacturers. Mr. Jones, vice president of Kelly & Jones, Pittsburg, and H. G. Stoddard, sales manager of the Trenton Iron Co., testified to the same effect.

DECLINED TO DIVULGE

Bureau Information, Did Commissioner Smith on Witness Stand.

When the house committee inquiring into Steel Corporation affairs resumed its session last Thursday, an effort was made to secure from Commissioner of Corporations Herbert Knox Smith information not yet published regarding his investigation of the Corporation. To all such efforts the commissioner emphatically declined to be a party, taking the position, under advice from the attorney general, that the law forbade such disclosures except upon authority from the president. The commissioner agreed to take up with the president the matter of making public the information sought.

The commissioner was the first witness on the stand when the committee reconvened. He said that the first inquiry into the affairs of the Steel Corporation was instituted in 1906. The bureau has a payroll of $175,000 a year for special agents, and $79,000 for statutory offices. Referring to his recently published report on the Corporation, Mr. Smith said that it was a summary of Part 1 of a report not yet printed. The full report will likely comprise three parts. Part 1 in its entirety will likely be published in about six weeks. The witness testified that the Corporation had never refused information or access to information. He had not put any witnesses under oath or issued subpoenas since it was not desired to give immunity to any witnesses.

STEEL EARNINGS

Showed Increase in Second Over First Quarter of Year.

An increase of $4,589,317, compared with the first quarter of the year, was reported by the United States Steel Corporation from its operations over the second quarter ended June 30, according to the quarterly statement issued by the finance committee after its meeting, July 25. The total second quarter earnings were announced as $28,108,520, compared with $23,519,203, for the first quarter ended March 31. The total first half earnings for 1911 are accordingly $51,627,723. This compares with total earnings of $50,760,025 during the first half of 1910, an increase for this year of $867,698.

The statement of the Steel Corporation, for the quarter ended June 30, this year, is as follows:

Earnings:—	
April, 1911	$ 9,412,573
May, 1911	9,590,444
June, 1911	9,105,503
Total earnings	$28,108 520
Less charges, etc	6,268,680
Net earnings	$21,839,840
Deduct:—	
Interest on bonds	5,783,293
Sinking funds	1,528,670
	7,311,963
Balance	$14,527,877
Dividends:—	
Preferred	6,304,919
Common	6,353 781
	$12,658,700
Surplus net income	$ 1,869,177

Unfilled Orders on Hand.

June 30, 1911 ..... 3,361,053 tons

Personal

Lee C. Moore, president of Lee C. Moore & Co., Pittsburg, sailed June 26 for Europe, where he will spend the next few months.

Robert Wuest, commissioner of the National Metal Trades Association, has returned to his offices at Cleveland after spending some weeks in Germany.

H. E. Higgins, treasurer and general manager of the Cleveland Steel Co., Cleveland, is spending his vacation by visiting points of interest in the west.

Lewis B. Rhodes, formerly superintendent of motive power of the Virginian railway, has been made southern manager, a newly created position, of the Ward Equipment Co., New York.

T. H. Williams has been appointed master mechanic of the International & Great Northern, with office at Mart, Tex. He succeeds W. J. McGee, who resigned to take a position with the Texas & Pacific.

S. W. Sparks has severed his connection with the Osbourne & Sexton Machinery Co., of Columbus, O., and on Aug. 1 will take charge of the machinery department of the Lake Erie Nail & Supply Co., Cleveland.

P. G. Smith, secretary of the J. D. Smith Foundry Supply Co., Cleveland, has taken charge of the eastern offices of this concern, located at 378 Ellicott Square building, Buffalo, from which point all eastern and Canadian business of the firm will be handled.

The titles of W. C. Stears, superintendent of shops of the Cincinnati, Hamilton & Dayton, Lima, O.; F. C. Pickard, assistant master mechanic at Moorefield, Ind., and W. G. Rose, assistant master mechanic at Ivorydale, O., have been changed to master mechanic.

E. C. Felton, president of the Pennsylvania Steel Co., who has been abroad for the past several months and who attended the international iron and steel conference at Brussels, as one of the official representatives of the United States, will return within the next two weeks.

W. S. Heger has resigned as manager of the San Francisco and Los Angeles offices of Allis-Chalmers Co. and will retire to private life which has been his ambition for the past two years. He will be succeeded by Fred L. Webster, who has been appointed Pacific coast manager.

E. Killing of the E. Killing's Molding Machine Works, Davenport, Ia., has just returned from an extended trip through Europe. While abroad Mr. Killing established agencies for his extensive line of molding machines in Germany, Russia, Austria Hungary, Sweden, Norway, Finland and Denmark.

A. H. Gits has resigned as president of the Peerless V Belt Co., and is succeeded by H. F. Ledyard, of Chicago. This company has moved its headquarters from Chicago to Cedar Rapids, Ia., where it has increased the capacity of its plant about four fold. The company manufactures noiseless, high-speed chains and power transmission machinery.

Obituary

F. A. Casey, vice president of the Ashton Valve Co., Boston, died at Billerica, Mass., July 15, from cancer of the liver. Mr. Casey was born in 1846.

James McCahill, Du'uth, died at his summer home at Lake City, Minn., July 22, aged 58. He was a carpenter and building contractor up to the early 90's, when he traded a small piece of Duluth real estate for 160 acres on the Mesabi range. This quarter section is now known as the Shenango iron mine.

Wm. R. Gaulbert, a veteran iron manufacturer of Philadelphia, died suddenly of heart disease at his home in that city, July 22, aged 79. Mr. Gaulbert was a senior member of the firm of Gaulbert & Caskey, operating the Fair Hill rolling mill at York and American streets, Philadelphia, which was built in 1855 and is a producer of merchant bar iron. For more than 50 years he had been connected with this works. Mr. Gaulbert was a member of the Pennsylvania Historical Society, of Philadelphia clubs, and a director in Philadelphia street railway companies.

ADDITIONAL BASIC

Bought by Pittsburg Consumer—Bessemer.

Pittsburg, July 26. (By wire.)

A steel company in the Pittsburg district, which recently bought basic pig iron at a low price, has closed for an additional lot of 2,000 tons for prompt shipment at a price understood to be slightly under $13, valley. Another steel company which recently asked for bids on 4,000 to 7,000 tons of basic has decided not to buy. It is expected that the inquiry of the Westinghouse Electric & Mfg. Co. for foundry iron will be held over until next week. The Republic Iron & Steel Co. has started additional blast furnaces and is now operating nine of its 10 furnaces. No. 2 stack of the Hazelton group has been blown out for relining. It is reported that considerable Bessemer iron has changed hands this week, but details are withheld.

STRUCTURAL MATERIAL

For Five Subways—Large Order for Rails.

New York, July 26. (By wire.)

Action is expected in a few days on the steel requirements for five sections of the new subways just awarded. The tonnage may reach 20,000. For canal work and terminal improvements in this city the New York Central will probably require about 20,000 tons of steel the balance of the year. Four thousand tons of steel for the Old Dominion piers, Norfolk, Va., are expected to go to the Virginia Bridge & Iron Works. The Georgia Central has placed 11,000 tons of open-hearth rails with the Tennessee Coal, Iron & Railroad Co.

The Central Oil House of a Large Steel Plant

Description of the Oil Supply Station at the Gary, Ind., Plant of the Indiana Steel Co.

Among the many interesting details at the Gary plant of the Indiana Steel Co., the arrangements which have been made for the storage and distribution of oils and grease are particularly worthy of study. A central oil house has been built through which all the lubricants and other oils are handled. Suitable tanks, pumps and other facilities are provided so that a close check is kept on the oil used by each department in the plant, thus reducing the legitimate consumption to a minimum. The arrangements absolutely prevent the loss of oil through theft or leakage and practically eliminate the fire risk, which is often serious in ordinary installations.

The oil house is a brick structure, 123 feet long and 30 feet wide, provided with steel roof trusses and a non-combustible roof. It is located in a detached position near the main store house. Loading and shipping tracks are placed on either side of the building.

The storage tanks are located in the basement, which is lined with concrete. The basement is sufficiently deep so that the temperature is comparatively uniform and it is heated by steam coils which preserve an even temperature in cold weather. Eight 15,000-gallon, twelve 500-gallon and one 1,000-gallon tanks have been installed. The large tanks are approximately 24 feet long and 11 feet in diameter, made of boiler plate, the heads being flanged from a single plate. They are placed horizontally and each tank rests on four concrete piers. The smaller tanks are vertical. The air vents from all the tanks are carried out through the roof. Two of the large tanks are individually heated by special pipe coils. The basement is cut off from the rest of the building by a fireproof door.

Gasoline is stored in three steel tanks which are buried in the ground outside the building. One of the gasoline tanks has a capacity of 1,000 gallons and the other two hold 500 gallons each. They are filled from the outside and are emptied by the hand pumps in the oil house.

Twenty-one self-measuring, self-filling, hand pumps, manufactured by S. F. Bowser & Co., Fort Wayne, Ind., are installed on the main floor of the oil house, as shown in Fig. 1. These pumps are connected to the various tanks and are used for filling cans. Eight Bowser automatic power pumps are also installed for filling barrels. They have an average capacity of 15 gallons per minute, except two which are used for pumping heavy oil. These have a capacity of 7½ gallons per minute. One power pump is connected to a pipe line delivering oil to the open-hearth furnace in the steel foundry and also to the brass furnaces and oil-burning, bolt-heading furnaces in the forge shop. The power pumps are belt-driven by a 10-horsepower, General Electric, 25-cycle, 440-volt induction motor.

Oil is shipped to the store house in standard tank cars, from which it is removed by compressed air and placed in the storage tanks. An air pressure of 60 pounds per square inch is used and before entering the tank the air is run through a separator which removes the water. From five to seven hours are required to unload a 6,000-gallon car of heavy

FIG. 1—PUMP ROOM OF THE GARY OIL SUPPLY HOUSE

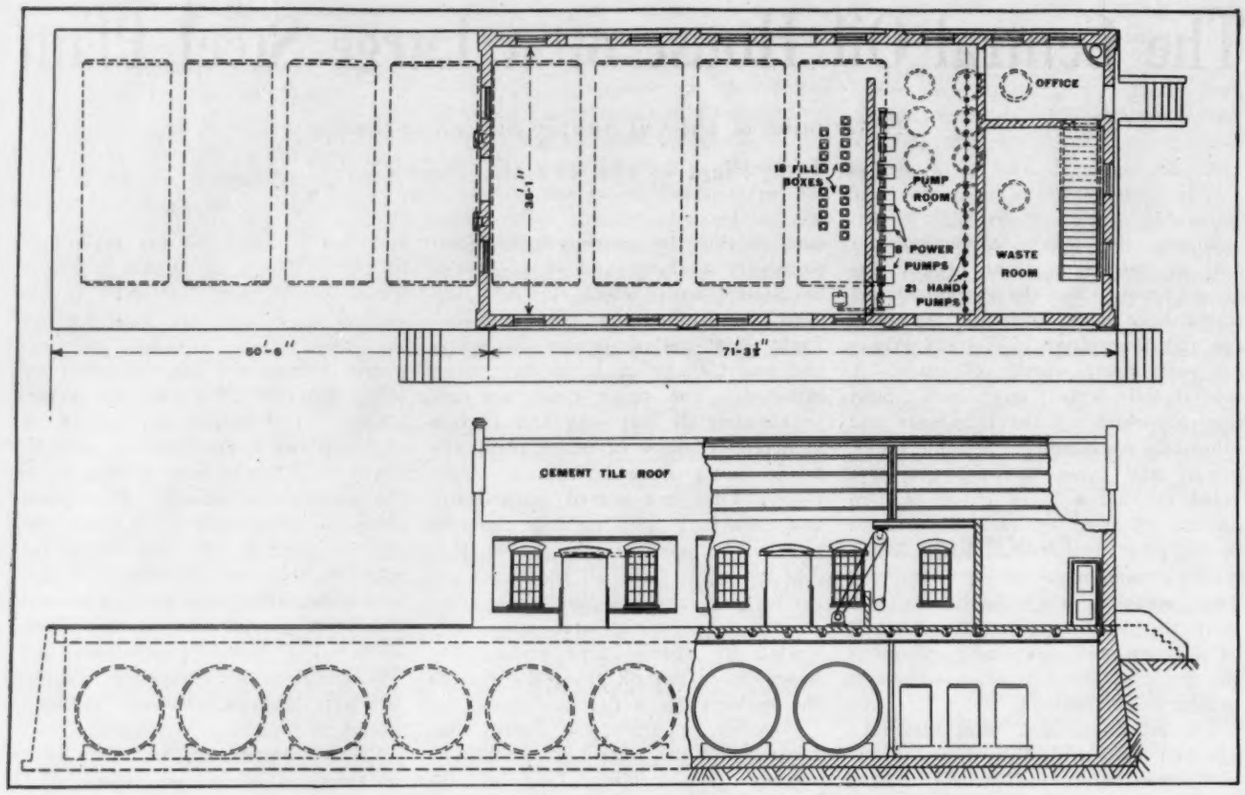


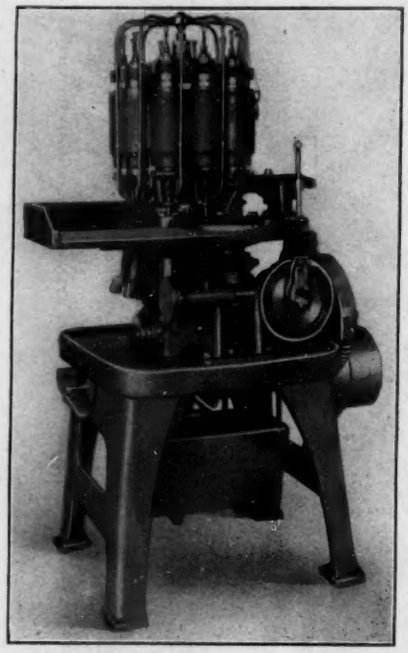
FIG. 2—GENERAL ARRANGEMENT OF OIL HOUSE, SHOWING LOCATIONS OF TANKS AND PUMPS

cylinder oil; approximately two hours are necessary to unload a car of standard gas engine oil, while a car of kerosene can be emptied in an hour and three quarters.

The heavy grease, which is handled in barrels, is stored in the west end of the building, in a room separated from the pump room by a heavy brick partition. Waste, paints and similar supplies are also handled through the oil house. A special room is provided for storing bales of waste. It is equipped with a Yale & Towne, triplex hoist, operating on an I-beam trolley for conveniently handling the bales.

The oil is shipped to the various mills at the plant in barrels on a standard gage freight car which is despatched daily. No oil is delivered except on written order of persons authorized to issue requisitions for it, and an accurate account of the consumption of each department is kept. The central oil station handles about 20 different kinds of liquid oils and distributes from 70,000 to 90,000 gallons per month.

The Empire Iron & Steel Co., Niles, O., manufacturer of black and galvanized sheets, ornamental metal ceilings, side walls, etc., has added 10 new ceiling dies to the present equipment of its ceiling department. These consist of designs prepared especially for this concern. The Empire Iron & Steel Co. is now preparing a handsome catalog, which will contain a large number of designs of sheet steel for ceiling purposes.



SEMI-AUTOMATIC RIVET DRILLING MACHINE

Semi-Automatic Drilling Machine

In the accompanying illustration is shown a semi-automatic rivet drilling machine, built by the Langelier Mfg. Co., Providence, R. I., which is designed for drilling the ends of solid rivets into tubular form. The drilling is done continuously by nine drilling spindles and there is one rivet loading or inserting spindle. The machine has capacity for drilling 50 soft steel rivets per minute with a hole 0.17 inch in diameter and 7-32 inch deep. The front or operator's side of the machine is shown in the accompanying illustration. The machine consists of a one piece column of 10 drilling heads which revolves at the rate of five revolutions per minute, around a central stationary upright post which is cast integral with the table. Each drilling head is provided with a drilling spindle running in a two-piece feed quill of such construction as to permit the drilling pressure to be overcome in the event of hard rivets being encountered and thereby preventing the stalling of the machine or breakage of the drills. On the inner side and at the top of each feed quill is located a roll which holds contact by a compression

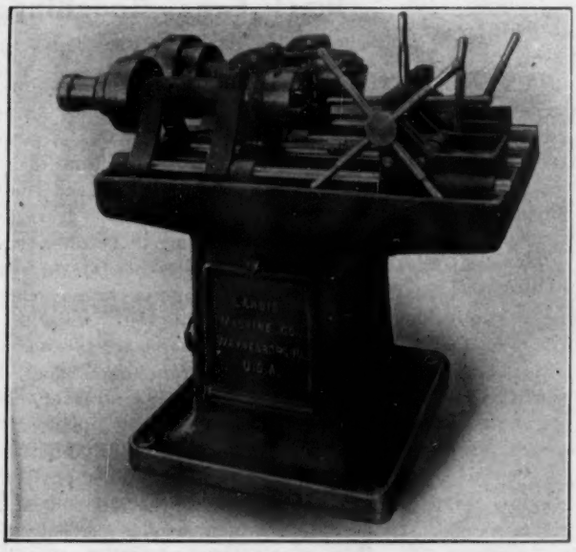


FIG. 1—LANDIS, ½-INCH DOUBLE-HEAD BOLT CUTTING MACHINE

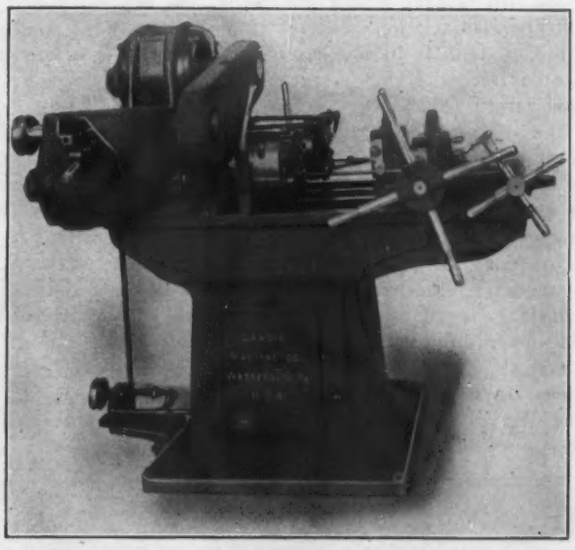


FIG. 2—LANDIS ONE-INCH DOUBLE-HEAD BOLT THREADING MACHINE

spring with a rim-feed cam fastened to the top of the central post. It will readily be seen that the rim-feed cam, being stationary, and the drilling heads revolving at the rate of five revolutions per minute, that nine rivets will be drilled simultaneously or ten for each revolution of the column, making a total output of 50 rivets per minute. Adjustment for depths of holes and for taking up the wear of the drills is made at the top of the central column. The rim cam is adjustable vertically to permit rivets of different lengths being drilled. Each drilling spindle is driven by a fiber pinion and the ten pinions mesh with a common central driving gear, the shaft of which passes down through the center of the middle post and is connected by bevel gears to the pulley driving shaft. The column is driven by a worm and gear, the worm shaft being connected by a pair of spur gears to the pulley shaft.

Each drilling head is provided with an anvil and a clamping vise jaw for holding the rivets while they are being drilled. The vises are opened and closed by bell crank levers, the lower ends of which are provided with rolls that contact with a stationary plate cam. This cam is adjustable to allow the vise jaw to clamp rivets with heads of different thicknesses. To the lower end of each feed quill is attached a drill steady jig or rest. In the lower end of the jig is a sliding bushing, the end of which is cupped and which is provided for accurately locating the rivet central with the drill and also for supporting the drill laterally during the drilling. The rivets are automatically carried to the vises by the rotary movement of a circular friction dial and are fed automatically into the vises by a push finger that derives its motion from a cam, the shaft of which is operated through a pair of spiral gears by the worm shaft. The rivets are ejected by a stationary, thin, sheet steel finger. The oil is forced to the drills by a pump, the oil being carried through the middle of the central gear shaft to a distributing head at the top, from which it is conveyed to each drill individually through oil tubes. The net weight of the machine is 1,600 pounds.

Threading Machines

Several novel features of design and construction are embodied in the new types of threading machines manufactured by the Landis Machine Co., Waynesboro, Pa. In Fig. 1 is shown a ½-inch, double-head, bolt cutting machine on which steel guides instead of cast iron guides are used. The steel guides possess a number of advantages in that they are very accurate as to size and insure perfect alignment unless affected by wear after long usage.

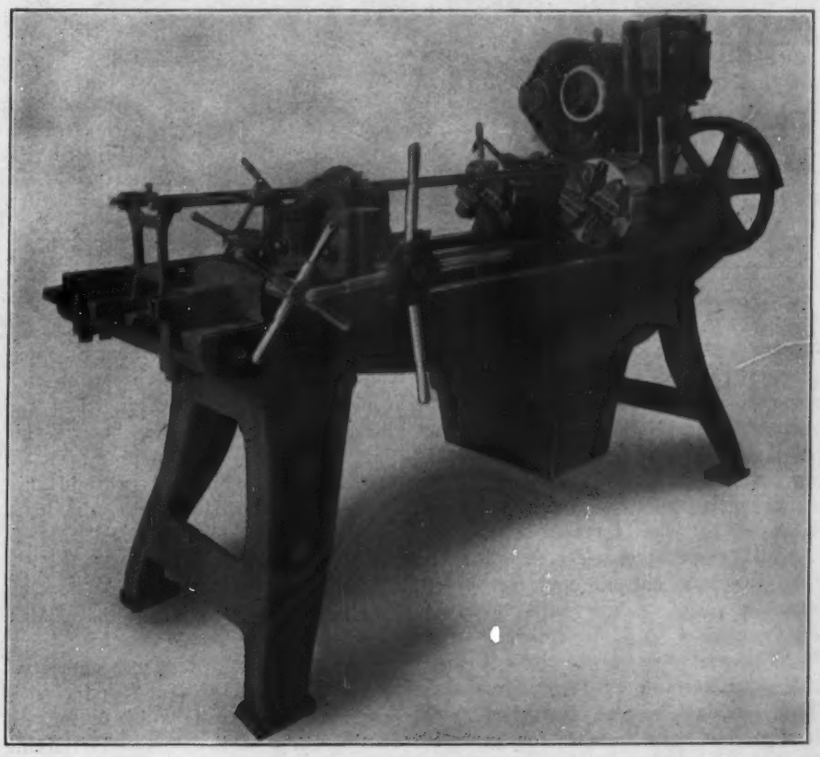
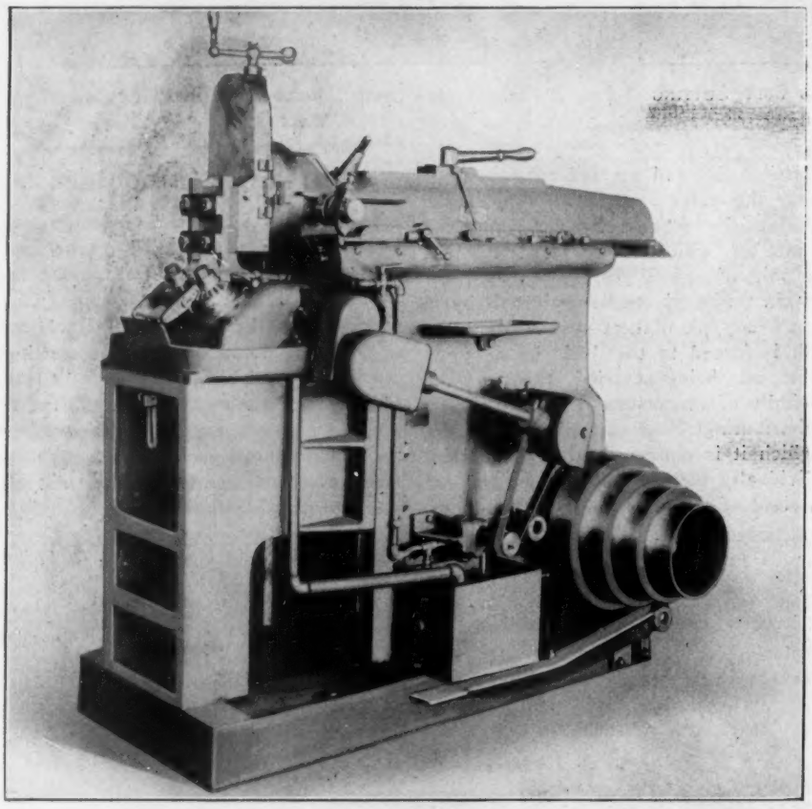


FIG. 3—LANDIS, 1½-INCH MOTOR-DRIVEN STAYBOLT CUTTER

The machine is built with a wide body which provides a large space for chips and the oil tank is in the base, being separated from the chip receptacle by a fine screen. The carriage is light and the oil pump is attached to the back of the machine and is of the rotary type. The machine is used for high speed work and is equipped with high speed steel dies.

A standard, one inch double head bolt threading machine, operated by a constant speed motor through a silent chain drive and equipped with mechanical speed change device with a speed range of 3¼ to 1, is illustrated in Fig. 2. The motor is mounted on top of the machine, away from



Bevel Gear Roughing Shaper

contact with the oil and chips. Speed changes can be made while the machine is in operation. The carriages have a vertical adjustment or can be adjusted sidewise for centering to the die and the machine is furnished with either rack and pinion operated carriages or carriages operated by a lever.

A 1½-inch, motor-driven, double-head staybolt cutter, operated by a variable speed motor with a speed variation of 4 to 1, is shown in Fig. 3. The motor is mounted on top of the machine and is direct-connected. The machine is also furnished with lead screw attachments for one or both heads and can be arranged to cut any pitch and any diameter within the range of the machine by changing the gearing, no extra lead screw being required. All main spindles are provided with recesses for returning the lubricant to the oil tank. The chasers in the Landis die are held by means of a clamp which is flush with the front edge of the die so as to permit of cutting close to the shoulders or heads of bolts at any time. Dies with very short throats or no throats at all, can be used and as no grinding is done in the throat of the die when sharpening, the throat remains permanent, which is a marked advantage on many classes of work. A mill type of clamp is also used, especially when threading pipe, as the clamp extends slightly over the chaser in such a manner as to protect it when the pipe splits or catches the chaser. This type of clamp is used in pipe mills on Landis heads and affords a rigid support to the die. The die shoulders are made entirely of steel.

The La Belle Iron Works, Steubenville, O., manufacturer of steel plates, black and galvanized merchant pipe, black and galvanized open-hearth steel sheets and other steel products, is sending to the trade a handsome enameled sheet steel calendar containing a pad good for one year.

Bevel Gear Roughing Shaper

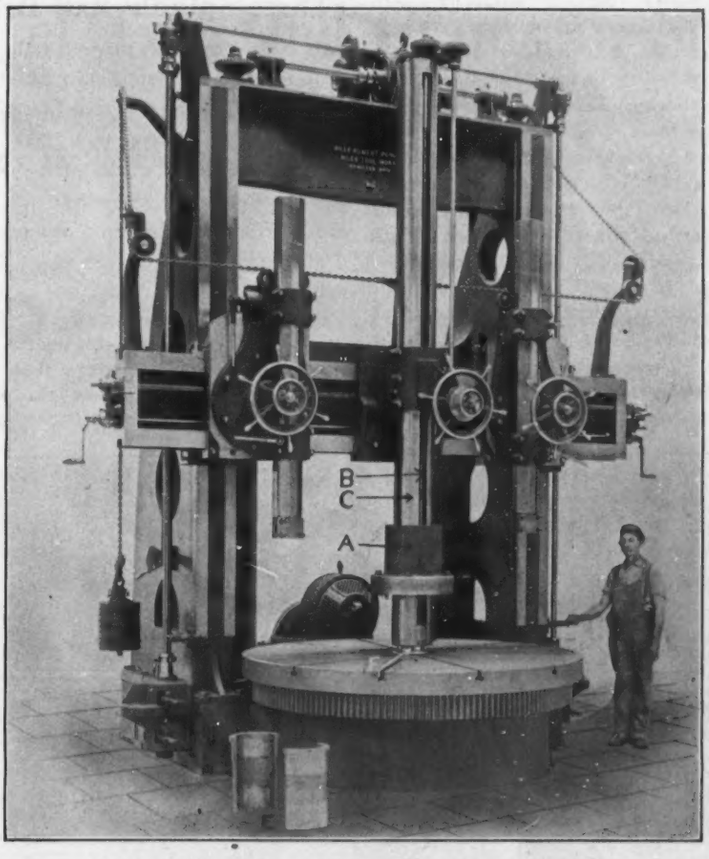
In the accompanying illustration is shown a bevel gear roughing shaper, built by Gould & Eberhardt, Newark, N. J. The principal function of this machine is to take care of the roughing or stocking-out of bevel gears preparatory to finishing them on a bevel gear planer. As most of the time consumed in cutting a bevel gear is devoted to stocking-out, it will be found more economical to do the roughing on the roughing shaper and the finishing on the gear planer. This machine is particularly adapted to roughing-out automobile differential steel bevel gears that have projecting hubs on the cone or small end of the gear and which would prevent them from being roughed-out in the ordinary disc cutter type of gear cutting machine, as on the latter the rotary cutter could not cut the entire face of the gear on account of the hub interfering with the diameter of the cutter. In construction, this machine is similar to the high duty shaper built by Gould & Eberhardt, with the exception that the large cross-head slide and table have been removed and a special work-head, with an indexing mechanism, has been substituted. This work-head may be arranged so as to cut one or two gears at one time up to the capacity of the machine, with suitable means for holding the blanks rigidly and lubricating the tools so that they can be removed very rapidly when finished and replaced with new blanks.

In the accompanying illustration are shown two nickel steel, 20-tooth bevel gears which are being roughed at one time, the operation requiring only three minutes for each gear. The gears have projecting hubs and to remove the chips that accumulate in the groove between the projecting hub and the inside face of the gears, two hook tools have been provided that fit in the groove under spring tension, and which can be easily thrown out of position when taking off the gear. The indexing of the blank from one tooth to another takes place at every return stroke of the ram. After the indexing has taken place and before the tool engages the work, means are provided to lock the work spindles so that the blank is securely held while under cut. As the ram returns and the tool is out of the cut, the automatic vertical feed to head takes place and so continues to operate until a small trip dog, located on one side of the head and which must be previously set to feed the tool to the

proper depth, disengages the feed. A large foot brake is arranged to act on the driving pulley and enables the operator to stop the machine instantly. The machine is provided with an automatic oil pump and a large reservoir and completely equipped, weighs about 4,300 pounds.

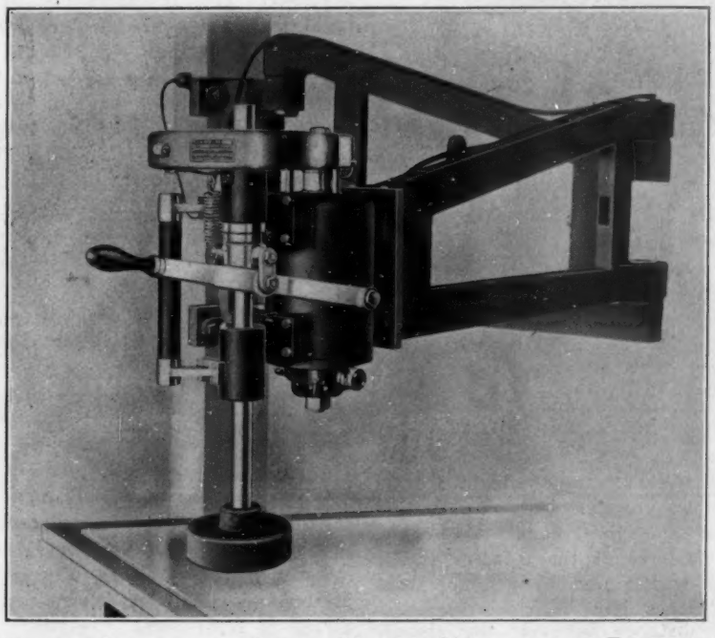
Portable Polishing and Buffing Machine

The portable, electric polishing and buffing machine, built by the Hisey-Wolff Machine Tool Co., Cincinnati, illustrated herewith, is shown suspended on a seven-foot, double-jointed arm to swing around a circle 14 feet in diameter. The polisher is built in two sizes carrying discs six and 12 inches in diameter, respectively, and weighing 95 and 140 pounds each without the arm. The polisher is regularly adapted for operating at a speed of 600 revolutions per minute at 110 or 220 volts, direct-current. A regulating lever in reach of the operator is used for varying the pressure on the disc, the weight of the machine as suspended being counterbalanced by a spiral spring. A vertical lever enables the operator to move the disc over the work in any direction and to maintain the desired pressure. The disc is driven through a spur reduction gear on top of the motor, the gears and the motor being entirely enclosed. For work on small surfaces and for operating at various angles, a portable type is built fitted with a breast plate and side handles attached to the motor casing. The machine can be readily handled by one man.



A Special Mill for Boring Gas Engine Cylinders

The International Harvester Co. has declared a quarterly dividend of 1¼ per cent on its common stock.



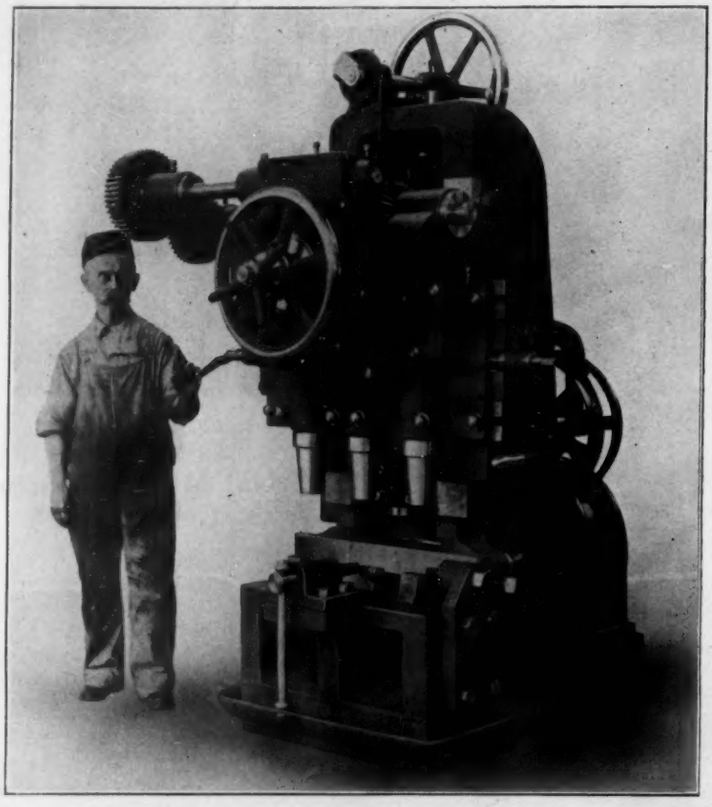
Portable Polishing and Buffing Machine Mounted on an Extension Arm

Special Mill for Boring Cylinders

The vertical boring and turning mill, shown herewith, is a special, 100-inch machine for boring and turning large sizes of gas and gasoline engine cylinders. It was built for the Wisconsin Engine Co., Corliss, Wis., by the Niles works of the Niles-Bement-Pond Co., Hamilton, O. The actual swing of the mill is 102 inches. It has a maximum height under the tool holders of ten feet, six inches for boring cylinders ten feet, two inches long. A vertical boring bar is centered between the revolving table and the cross rail. The boring bar, *C*, has a traveling head, *A*, which is raised and lowered by a screw, *B*. The boring bar is 12 inches diameter and is fitted with a 19-inch traveling head for boring cylinders from 20 to 23 inches in diameter. A boring sleeve, 24½ inches in diameter, is used for boring cylinders from 23½ to 32 inches in diameter. In both cases the feed for the bar is taken from the feed rod at the right of the mill and is transmitted through a vertical rod to the top of the boring bar, where the elevating feed rod is driven through a pair of spur gears. The saddle for the 12-

inch boring bar is equipped with bronze bushings, *E*, so that a 10-inch bar can be used instead of the 12-inch bar.

The boring head has eight feeds ranging from 1/32 inch to one inch, and a fast traverse for the bars and saddles. On both sides of the central boring bars are vertical boring heads with vertical slides of sufficient length to turn work 60 inches high above the table of the mill. When in use, the boring bar is raised by a crane which engages eye-bolts at the top of the bar and then is lowered into the cylinder after it has been placed on the table of the mill. The bar is supported and centered on the table at *F*. The table of the mill has a diameter of 99 inches, while the table track has an inside diameter of 72 inches, and the table spindle is 14 inches in diameter. The machine housing is thoroughly and substantially braced throughout. The cross rail is counter balanced and the general features of construction are the same as on the Niles standard boring mill. A 20-horsepower, variable speed motor with a speed variation from 625 to 1,500 revolutions per minute and a 7½-horsepower constant speed motor running at 815 revolutions per minute, drive the mill.



THREE-SPINDLE RAIL DRILL EQUIPPED WITH A SPECIAL POWER ELEVATING DEVICE

Three-Spindle Rail Drill

A new type of three-spindle rail drill having a capacity of three 1¼-inch holes in steel, using standard, high-speed steel drills, has been built by the Niles works of the Niles-Bement-Pond Co., Hamilton, O., for the Norfolk & Western railroad. The drill illustrated herewith is used for drilling rails. Two drills are operated together, the one being placed slightly in advance of the other at a distance somewhat greater than the length of the rail from the other drill. The ends of the rail are drilled in succession by two men, who slide the rail from one machine to the other. The rail to be drilled is set endwise against an adjustable stop and clamped in position by a vise.

The spindles are made adjustable from 3½ to 9-inch centers and are moved by screws. They are contained in one sliding, counterweighted head which has power down feeds, friction release and quick-hand movements. The diameter of the spindles is 2¾ inches, with a maximum spindle feed of 10 inches. Nine inches is the maximum distance between the spindle centers while 4½ inches is the minimum distance. The spindles can be raised 16 inches above the base of the drill.

The distinguishing feature of this drill is the power elevating device for raising and lowering the cross rail without throwing out the feed. The cross rail is actuated by power which is transmitted from the reversing mechanism to a revolving nut on the elevating screw. A one-inch lead is given the elevating screw. Four change gears driven in two pairs change the speed of the feeding mechanism, giving feeds of 0.008, 0.01, 0.02 and 0.014 inch to the three spindles. On the left side of the drill, the cross rail is made long enough to accommodate a bond wire between the spindles for drilling street railway rails. The main saddle is a part of the end spindle saddle. A geared, vertical shaft transmits the driving power from the 15-horsepower motor at the base of the column in the rear of the machine, to the spindle.

Sampling and Analysis of Gases

The United States Steel Corporation methods for the technical sampling and analysis of gases, is contained in a 36-page pamphlet, issued by the Steel Corporation's chemists' committee. With the increased significance attached to the economic control of those industrial processes involving the combustion of fuels, it is readily apparent that accurate knowledge of the composition of the gases encountered is a matter of prime importance. This is exemplified by the rapid increase in the use of internal combustion engines using blast furnace or producer gas as fuel, and by the increasing necessity of greater watchfulness upon the efficiency of boilers, stoves and furnaces. Therefore, a standard system of sampling and analysis of gases for use by the laboratories of the United States Steel Corporation, became a necessity in order that comparable results might be obtained with the maximum degree of accuracy consistent with the minimum of time requisite for execution. The apparatus shown in this pamphlet for the analysis is to be considered only as a type of permissible form. However, the form of apparatus and methods, as described, will take precedence over all others employed for the analysis of gases throughout the laboratories of the Steel Corporation. Methods of sampling and making analyses of blast furnace, producer and flue gases are given and the apparatus required is described.

The Life History of Cells and Grains in Steel

Size, Both of Grains and Cells, Increases Not Only With the Temperature to Which the Steel is Heated, But Also With the Length of Exposure to That Temperature

This paper aims chiefly to reduce to some kind of order the hitherto very loose idea of what the *grain size* of steel means; to distinguish between *grain size* proper and *cell size;* to trace the life-history of grains and cells; and to give a clear mental picture of the mechanism of that life-history, and in particular to show that the size, both of grains and of cells, increases not only with the temperature to which the steel is heated, but also with the length of exposure to that temperature.

Steel containing any considerable quantity of carbon, as shown in Figs. 1, 8, 9 and 10, is not a single, chemically homogeneous mass but a conglomerate or granitic mass, in this case composed of white grains of nearly pure iron and dark masses in which the carbon present is concentrated. These dark masses contain about 0.90 per cent of carbon, and are called pearlite; while the white grains of pure iron are called ferrite.

Low Carbon Steel.

Very low carbon steel, containing 0.12 per cent of carbon or less, has so little of this dark pearlite that it may be regarded not as a conglomerate or granite like the higher carbon steels, but as consisting substantially of a single elementary substance, like pure copper, lead, tin, or gold. In our low carbon steel this pure element of course is iron, and the particles of this iron are called ferrite, to distinguish them from the small quantity of pearlite which is present even in such steel. These simple elementary masses, the pure metals in general, consist of distinct grains.. Each grain is an ill-formed crystal, all of its particles having one and the same crystalline arrangement, cleavage, etc.

FIG. 1—STEEL CONTAINING 0.40 PER CENT CARBON, HELD AT 1,200 DEGREES CENT., FOR TWO HOURS AND COOLED SLOWLY
(Magnification, 40 diameters.)

The grains of pure iron or ferrite in low carbon are like those in high carbon steel in all respects except that in low carbon steel they are in immediate contact with each other, in higher carbon steel they are separated from each other by these intervening islets of pearlite. But both in low and in high carbon steel it is to these individual grains of pure iron that the terms *grain* and *grain size* should refer. fer..

Cells in Rail Steel.

Sharply distinguished from these grains of pure elemental iron are the cells which are familiar in the structure of rail steel. Fig. 2 shows such cells. They can be set up in any carbon steel that is not very poor in carbon, by appropriate treatment. They consist of cell walls or shells of pure iron or ferrite and meshes or kernels containing the carbon present. These kernels, in fact, consist essentially of pearlite mixed with more or less ferrite so finely divided as to be invisible; in short, of invisible ferrite. These cells are often spoken of as grains, but as this is likely to confuse them

[1]Abstract of a paper presented at the annual meeting of the American Society for Testing Materials, by Dr. Henry M. Howe.

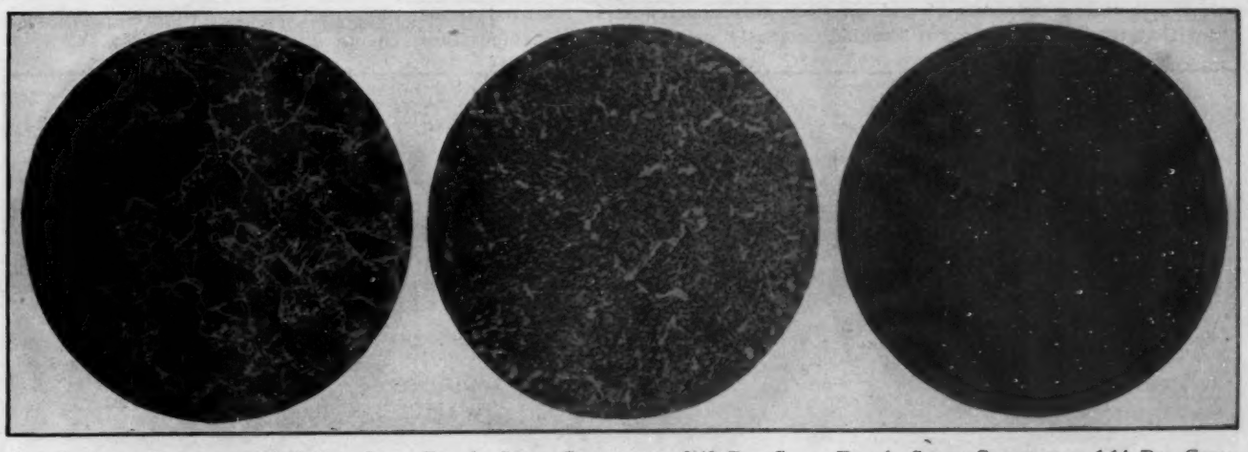
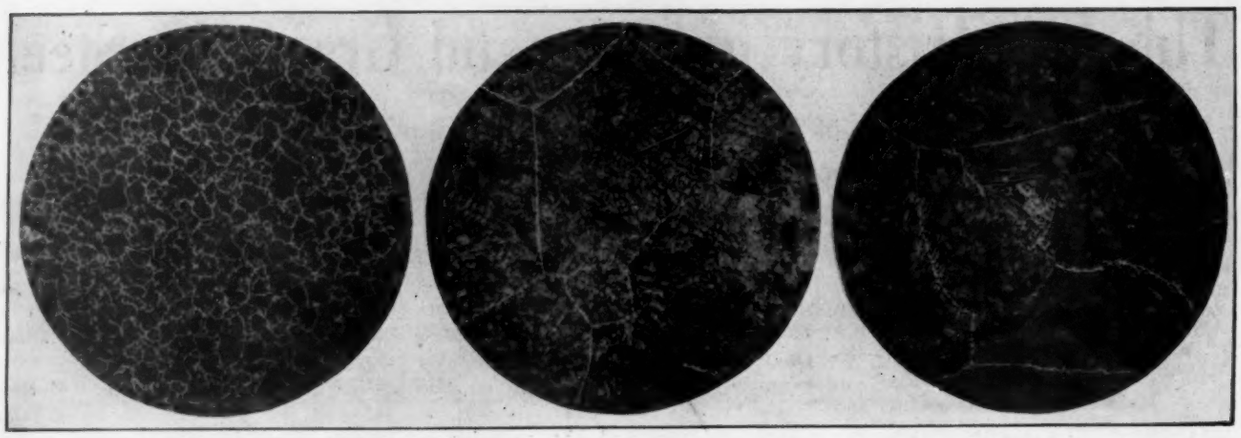


FIG. 2—STEEL CONTAINING 0.40 PER CENT CARBON, HELD AT 1,000 DEGREES CENT., FOR 10 MINUTES AND COOLED IN AIR
(Magnification, 40 diameters.)

FIG. 3—STEEL CONTAINING 0.40 PER CENT CARBON, WHICH SHOWS THE STEEL ILLUSTRATED IN FIG. 10, RE-HEATED TO 740 DEGREES CENT., KEPT AT THIS TEMPERATURE FOR SIX HOURS AND QUENCHED
(Magnification, 40 diameters.)

FIG. 4—STEEL CONTAINING 1.14 PER CENT CARBON, HELD FOR SIX HOURS AT 800 DEGREES CENT., AND THEN COOLED SLOWLY
(Magnification, 40 diameters.)



FIGS. 5, 6 AND 7—STEEL CONTAINING 1.14 PER CENT CARBON AND HELD FOR SIX HOURS AT 900, 1,100 AND 1,200 DEGREES CENT., RESPECTIVELY, AND THEN COOLED SLOWLY
(Magnification, 40 diameters.)

with the grains of ferrite, they will be called cells and the name grains will be restricted to the grains of ferrite.

A careful examination of the existing evidence shows that the ferrite grains, both of low carbon and of high carbon steel, increase in size with the temperature to which they have been heated and with the length of exposure to that temperature; and the experiments which form the basis of this paper prove that this is true also of the cells themselves. The results are shown graphically in Fig. 11.

Growth of Grains of Ferrite.

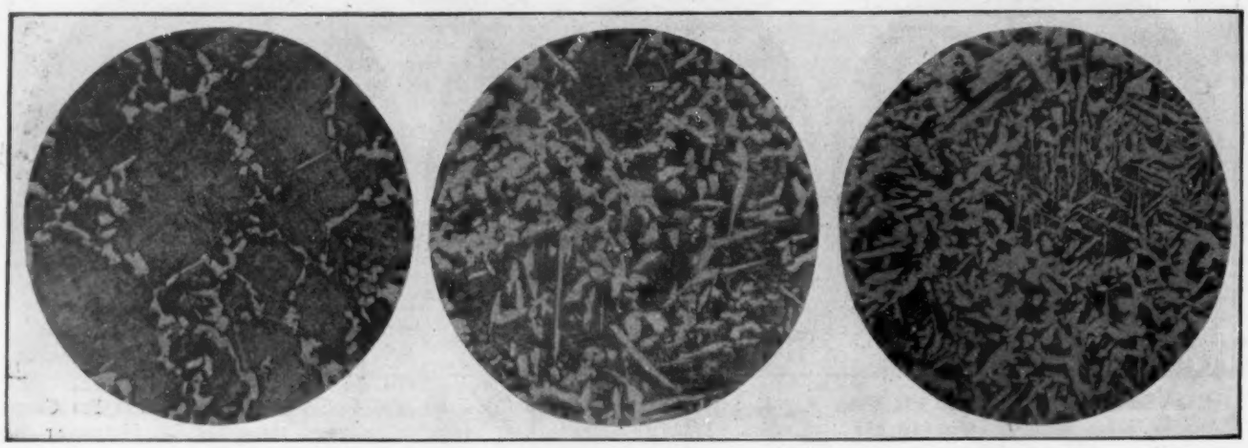
That the individual grains of ferrite in low carbon steel show growth in size on exposure to a high temperature is exactly what happens to other pure metals, and what ought to be expected. Each grain is in immediate contact with other like grains, which differ from it only in having a different crystalline arrangement; and in order that two adjoining grains should merge and become one, it is necessary only that the particles which compose one of them should adopt the crystalline arrangement of the other, which they can do by simply rotating about their own centers, or in other words, changing their polarization, without having to migrate from one place to another. The fact that this merging or growth of grain size of the metals in general occurs readly on exposure to a high temperature, which increases the mobility of the particles, is readily explained by this consideration, that it does not call for any translation or migration of the particles of either of the merging grains.

Hence, the well known fact that very low carbon steel coarsens rapidly at temperatures in the neighborhood of 700 degrees Cent., instead of being a matter of surprise, is exactly what should be expected; and the things which requires explanation are, first, that this coarseness is removed spontaneously on carrying the temperature to the top of the critical range, say 900 degrees Cent.; second, that steel higher in carbon does not coarsen at 700 degrees Cent.; third, that heating to higher temperatures materially above the critical range coarsens both the ferrite grains and the cell structure to a degree which increases with the temperature and the length of exposure; and fourth, that this coarsening in turn is cured by reheating to the top of the critical range

Critical Range.

All these phenomena are readily explained by what is known to occur in this critical range; but without this knowledge the phenomena seem inexplicable. Let us take these four phenomena up in series.

When low carbon steel is heated to the top of the critical range, it passes indirectly from the alpha or magnetic into the gamma or non-magnetic form of iron called austenite; and this change is accompanied by a shattering



FIGS. 8, 9 AND 10—STEEL CONTAINING CARBON, 1 PER CENT, AND HEATED TO 1,000 DEGREES CENT., AND COOLED SLOWLY TO 765, 730 AND 740 DEGREES CENT., RESPECTIVELY, AND THEN QUENCHED IN WATER, EXCEPT FIG. 10, WHICH WAS COOLED SLOWLY TO THE ROOM TEMPERATURE
(Magnification, 40 diameters.)

of the pre-existing coarse grains of the old ferrite. Hence the grain refining of low carbon steel. It is of course but natural that the new substance, the gamma iron formed out of the old, should take on a new crystallization of its own, disregarding that of the old alpha ferrite, and that this re-crystallization should incidentally shatter the old coarse grains, each of which was simply a mass with uniform crystalline arrangement.

High Carbon Steel.

That higher carbon steel does not coarsen at 700 degrees Cent., and neighboring temperatures is only what should be inferred from its granite structure. The individual islets of ferrite, shown in Fig. 7, are separated from each other by intervening masses of solid pearlite. They cannot merge without reaching each other. This they cannot do without displacing the pearlite masses in which they are imbedded, and the rigidity of these pearlite masses defies any attempt thus to displace them. Figs. 3 and 8 show one and the same steel before and after a long holding at 740 degrees Cent., followed by quenching in water to fix the structure there formed. While the structure of the pearlite itself has changed, the individual grains of ferrite have been unable to merge and thereby to coarsen, simply because the rigid pearlite has prevented their motion.

Coarsening of Cell Structure.

The coarsening of the cell structure by long and high heating above the critical range is explained as follows:

When the steel rises past the bottom of the critical range its pearlite changes abruptly into this same gamma iron or austenite, into which low carbon steel changed at the top of the critical range; and during the passage up through that range the ferrite grains are gradually absorbed by the austenite thus formed, the absorption completing itself at the top of that range though not instantaneously. Hence, when above that range, the metal is no longer a composite or granitic mass as it is in the cold and at all temperatures below that top, but a single substance, nearly homogeneous chemically in the same way that red hot, plastic glass is chemically nearly homogeneous. The grains of this austenite, because it is a single instead of a composite substance, readily merge with rapid growth of the grain size, exactly as those of low carbon steel do at about 700 degrees Cent., simply becauses each grain is in contact at all points with other like grains, so that the merging requires nothing more than that the component particles of either of two adjoining grains shall, without any migration, simply rotate about their own centers so as to adopt the crystalline structure of their neighbor grain.

When the steel again cools down through the critical range, the austenite of which it consisted when above that range begins re-generating the ferrite which it had absorbed in passing up through that range; and like other mothers in general each austenite grain expels its offspring to its own exterior or in other words forces this ferrite out to the boundaries which separate grain from grain. This expulsion is not complete, but consists in massing a large part of the ferrite, as it is born into the grain boundaries. Beyond this some of it is massed in the cleavages of the mother austenite grains, and some of it remains scattered through those grains. But the essential thing to recognize is that the chief massing is in the boundaries; the next in importance is in the cleavages, and a certain unmassed residue is left scattered at random through the grains themselves.

This massing of ferrite continues during the whole passage down through the critical range, and at its bottom the residual mother austenite abruptly changes back into pearlite, with the sharp evolution of heat known as the recalescence. Thus the cycle is complete. We started with a mass of ferrite grains imbedded in pearlite; we saw that pearlite change into austenite on rising past the bottom of the critical range; that austenite gradually absorb the ferrite during the passage up through that range; the absorption complete itself at the top of that range; the gradual growth of the grains of resulting pure austenite at temperatures above the range by the merging of adjoining grains; the rebirth of the ferrite and its massing in the boundaries between those grains in passing down through the critical range; and the change of the residual austenite back into pearlite at the bottom of that range.

It is this massing of the ferrite in the boundaries between the grains of austenite which bear it that causes the cell structure. And it is the progressive coarsening of the austenite when above that critical range, by the merging of neighboring grains, that leads to the coarsening of the cell structure by high or long heating. Thus the coarsening is in a sense due to antenatal conditions.

It is of course but natural that this merging of the austenite grains should be a matter of time, and should occur the faster the higher the temperature. Here then, we have a ready explanation of the coarsening of the cell structure; (A) with the temperature reached when above the critical range; and (B) with the length of exposure to that temperature.

Figs. 4 to 7 show the progressive coarsening of the cell. In this partic-

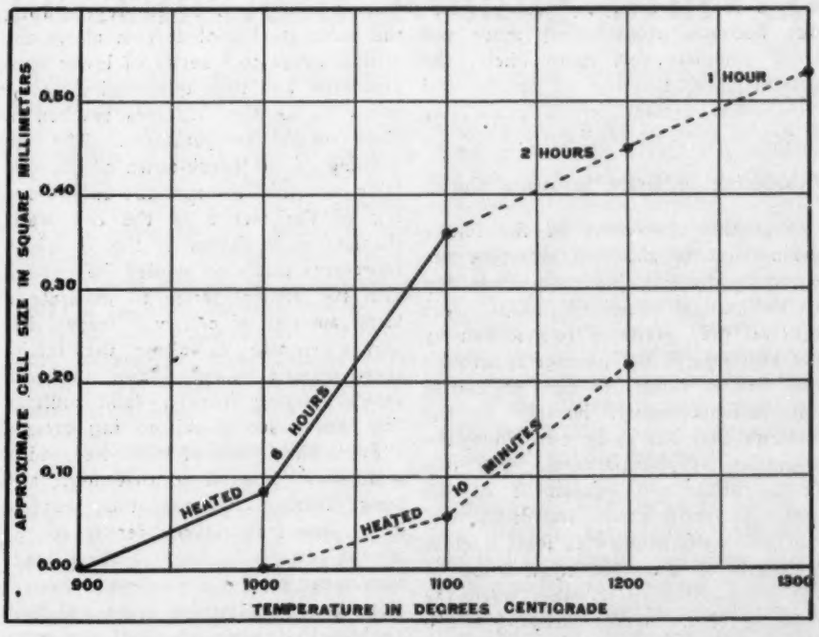


FIG. 11—DIAGRAM SHOWING THE RELATION BETWEEN APPROXIMATE CELL SIZE, TIME AND TEMPERATURE OF HEATING FOR STEEL CONTAINING 1.14 PER CENT CARBON

ular case the cell walls are of cementite instead of ferrite.

The coarsening of the ferrite grains, as distinguished from cells, caused by long and high heating is similarly explained. It represents the greater local massing of ferrite in grain boundaries and cleavages; and this greater massing reflects either the greater size of the austenite grains which generate and mass the ferrite, for, of course, two adjoining large grains generate and hence mass locally more ferrite than two small grains, or else the fact that such ferrite as they generate they eject to their exterior, and thus concentrate locally, the more efficiently because of their more perfect crystalline organization and government due to their long exposure to a high temperature at which the particles are so mobile that their crystalline organization becomes progressively more and more complete; or, more likely, the greater local massing of ferrite and consequent greater ferrite grain size is due to both causes jointly.

Coarsening of Grain Structure Cured.

That this coarsening of the ferrite grains and of the cell structure are cured by holding just above the top of the critical range reflects the fact that all this ferrite is re-absorbed by the austenite in the passage up through the critical range, though of course not instantaneously, because of the distance that has to be covered by the migration of the particles. For this re-absorption and effacement of the grains of ferrite grains and of the ferrite cell walls implies at least a close approach to complete equalization of the composition or in other words the undoing of the ferrite massing which had caused the coarse ferrite grains and coarse cell structure, and the redistributing of the carbon and iron which the undoing of that massing implies, immigration of carbon into the areas where ferrite alone is, and emigration of iron to make room for that carbon.

Effect of Rapid Cooling.

From this point of view the life history of the cell structure explains itself readily, as does the fact that long, high heating lessens the quantity of visible ferrite in air-cooled steel. That life history is that, though a very rapid cooling prevents the formation of the cell structure, a moderately rapid cooling, as for instance in the air, makes it clear as in Fig. 2, and a slower cooling again effaces it, as in Fig. 10, both of the same steel. A very rapid cooling affords no time for the massing of the ferrite in the cell walls. A somewhat slower cooling does afford the time needed for that massing. A still slower cooling gives time for the ferrite, which has remained scattered through the areas where the grains of austenite were, to assemble into visible masses, and thus to draw attention away from the cell walls and to mask them, while at the same time the ferrite of these cell walls follows its natural inclination to spheroidize, to draw together into thicker masses by surface tension (called also capillary attraction), just as a string of little drops of oil brought into contact strive to draw together into a single spherical drop.

The progress of this coalescence of the internal ferrite into islands and the masking of the cell structure may be traced in Figs. 8 to 10, representing the same steel cooled from above the critical range to a series of lower temperatures, and then quenched in water so as to fix the structure reached at their several temperatures. The beginning of the break-down of the cellular structure through the spheroidizing of the ferrite of the cell walls themselves is shown in Fig. 8, which represents this steel cooled far enough into the critical range to generate a large amount of cell wall ferrite, but slowly enough to allow the ferrite there massed to spheroidize, to break ranks, passing from a solid military line into a set of skirmishing groups.

From this point of view we readily understand how it is that high and long heating increase the pearlitic areas free from visible ferrite in the air-cooled steel. Such heating leads to a more perfect crystalline organization of each austenite grain and thus enables that grain to expel the more thoroughly to its boundaries the ferrite which it generates in cooling through the critical range. It leaves less ferrite in the interior of that grain so that such ferrite as is within the grain is more scattered, and is correspondingly slower to coalesce into visible grains.

Again, from this point of view the striking prominence of the cellular structure in rail steels readily explains itself. These steels are habitually high in manganese, an element which makes the movements in general within the metal sluggish, as is shown by its increasing the lag of the critical range, and lessening the cell size and the thickness of the cell walls. In this way manganese retards both the growth and the break-up of the cellular structure. Most steel objects, other than those of hardened steel, which lack the cell structure, lack it because they have passed through and beyond the cellular period. In rails the relatively rapid air-cooling jointly with the retarding action of the manganese cause us to catch the metal during the cellular period.

From this same point of view we readily understand the arrangement of the ferrite of steel heated to a very high temperature in parallel streaks, as in Fig. 1, often together with the cellular structure, rather than in irregular islands, as in Figs. 9 and 10. The strength of the crystalline organization reached at the very high temperature, because of the great mobility at that temperature enables those austenite grains to mass, not only into their boundaries, but also into their cleavages, so much ferrite that it there forms readily visible masses, parallel because the cleavages of the austenite which existed during its birth were parallel. In the same general way we understand the tendency of the offshoots from the ferrite cell walls into the kernels of pearlite which they enclose to be parallel as in Fig. 2. This represents their concentration during birth into the parallel cleavages of the then existing austenite. And in the same way it explains the frequent parallelism of the sheets of ferrite even when the cell structure can no longer be traced, as in Fig. 10. The smaller bodies of ferrite in the cleavages because they are so much thinner, have been unable to obey the spheroidizing tendency which has caused the thicker masses of ferrite in the cell walls to break ranks and efface the cell structure.

All these attempts to explain existing phenomena should be put forth tentatively, however, for confirmation or rejection on the examination of further evidences.

A 100-Pound Tool Room Hammer

The Massillon Foundry & Machine Co., Massillon, O., is now building a 100-pound steam hammer for tool room use. In construction, this hammer is similar to the other sizes of Lane, single-frame hammers, built by this concern, which vary in size from 200 to 3,300 pounds. The height of this 100-pound hammer from the base to the exhaust pipe is 65⅛ inches, while the steam pipe is placed 70⅜ inches above the base and the over-all height of the cylinder and frame is only 90 9/10 inches. A combination hand and foot treadle makes this hammer convenient for tool room work and it can be operated by one man.

Conducted by the American Rolling Mill Co.

Coincident with the construction of its new open-hearth plant and rolling mills at Middletown, O., the American Rolling Mill Co. has recently completed a new research laboratory which contains a number of features of unusual interest. The building occupies a pleasant site opposite the main offices of the company and is provided with the latest improved equipment for investigating the physical, chemical and electrical properties of iron and steel products. The facilities at the disposal of the investigator are not excelled by any industrial laboratory in the country.

The laboratory is not used for routine mill work of any character, but is devoted entirely to systematic investigation and research. The American Rolling Mill Co. does not aim to produce ordinary, commercial grades of material, but devotes its efforts principally to the manufacture of special products for special purposes. Its principal business is the production of the purest ferrite iron that it is possible to make on a large scale using the open-hearth process, but the company will undertake the manufacture of iron and steel products to meet any special requirements when a sufficient tonnage can be secured to justify the outlay. To make the necessary investigations and studies, the research laboratory has been established.

Electrical Laboratory.

Four rooms on the first floor and two in the basement are equipped for electrical investigations. The main electrical laboratory, taking up the entire width of the building, gives ample space for the main switchboard, motor generator set, pedestals and benches for general testing. This room is shown in Fig. 3. The standards room and sheet steel test room, Figs. 5 and 6, which are adjacent to the main laboratory in the rear are equipped with benches, pedestals and test or auxiliary switchboards suitable for special work. The computation room, which also serves as an office of the electrical engineer, is adjacent to the main laboratory in front, and is convenient for overseeing the work. In the basement is located the storage battery room and shop, which also serves as a terminal room for outside power.

The electric wiring system for the building was laid out to be as simple and flexible as possible. All wires are laid in conduits, and under benches a metal trough is used, which will take care of any temporary cables that may be necessary for special

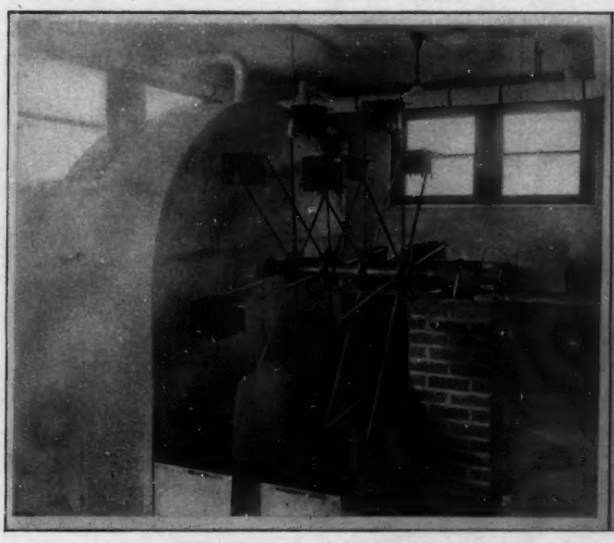


FIG. 1—DEVICE FOR TESTING THE EFFECT OF ACIDS, SEA WATER OR FRESH WATER ON STEEL SHEETS

FIG. 2—THE PHYSICAL TESTS DEPARTMENT

FIG. 3—MAIN ELECTRICAL LABORATORY

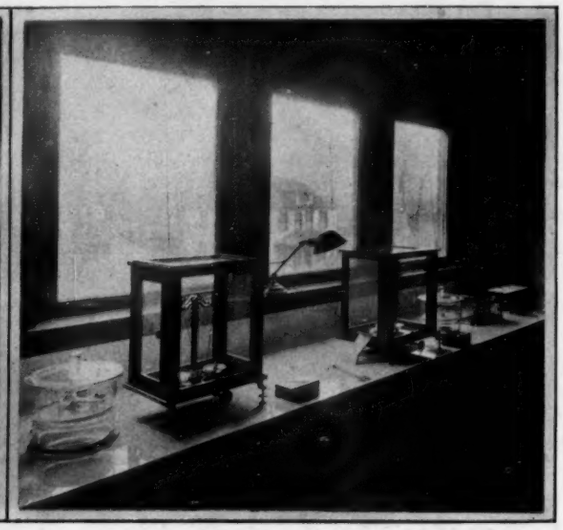


FIG. 4—THE BALANCE ROOM

work, thus keeping the main floor free from obstructions. Practically all power and distributing wires terminate in receptacles both on the main switchboard distributing panel and on the benches and pedestals, thus making possible many combinations with plugs and cord connection at the main switchboard. Two 125-volt storage batteries are installed and are controlled from one panel of the main switchboard; arrangement can be made for series and parallel working and taps are brought out to receptacles in such a way that almost any voltage within the limit of the set may be obtained. Another panel on the main switchboard controls the motor generator set, which is of special design for magnetic testing requirements. The motor is of the interpole type, 7.5 horsepower capacity, having a speed ratio of 4 to 1. The generator, which gives a sinusoidal wave form, is 2.5 kilovolt ampere capacity, and is operated from 17½ to 70 cycles.

Magnetic Tests of Steel.

The electrical division of the research department is equipped throughout for complete tests on steel for magnetic and electrical properties. Modern apparatus is used, but old types are retained and can be used at any time. The permeability of sheets and solid bars can be determined by various methods; watt loss and ageing tests are made on sheet steel and conductivity and coefficient of expansion tests can be made on bars or sheets.

Particular attention is given to the question of standards of precision. The standards room, Fig. 5, is equipped exclusively for this work and is provided with several instruments which are used for standardizing the instruments that are used continually in the laboratory. Standard samples for various apparatus are kept on file in this room and are used from time to time in checking-up.

The metallurgical division of the research laboratory occupies the entire second floor of the building and consists of eight rooms, as follows: Office, distilling room, dark room, private research laboratory, main chemical laboratory, supply room, balance room and miscroscopical laboratory. All the rooms are heated with low pressure steam and are regulated by the Johnson system of thermostatic regulation to 72 degrees Fahr. Electric terminals are so arranged in the various laboratories and rooms that any current from one volt up to 220 volts can be obtained at all times.

The chemical laboratories contain three vitreous enameled sinks connected to the sewer by a terra cotta pipe. All sinks are fitted with three

FIG. 5—STANDARDS ROOM

FIG. 6—SHEET STEEL TEST ROOM WHERE SHEETS ARE TESTED FOR THEIR ELECTRICAL PROPERTIES

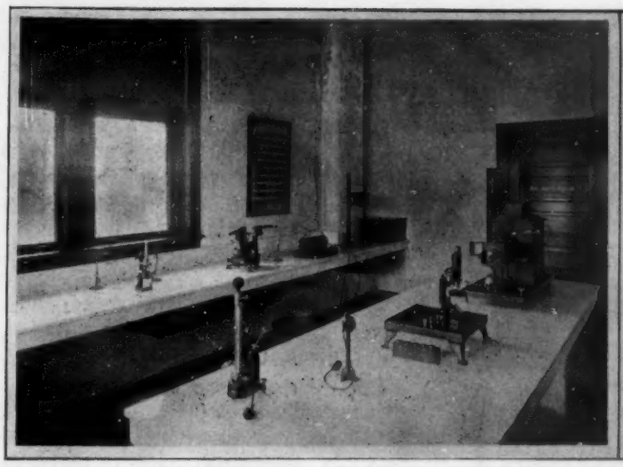


FIG. 7—MICROSCOPICAL LABORATORY

FIG. 8—MAIN CHEMICAL LABORATORY

faucets, supplying hot and cold water, and distilled water. The distilled water is furnished by a still in the building, heated by live steam, which has a capacity of ten gallons per hour. The still is located at an elevation of about 10 feet above the floor so as to give a sufficient head. It is connected by a block tin pipe to the basement, to all the wash-stands in the building and to a tap in the storage battery room. All gas, air and vacuum pipes in the chemical laboratories are embedded in concrete, the valves being placed beneath the table tops. Lead pipes are run from the laboratories to the basement where connections are made with gasometers from which various gases, such as oxygen, nitrogen and hydrogen can be obtained. The shelves beneath the tables are suspended from the concrete table tops by iron bars.

The supply room, Fig. 10, adjoins the main laboratory, being connected thereto by double swinging doors. All shelves in the supply room, balance room and microscopical laboratory are of white carara glass. Supplies are unloaded in the supply room from a dumb waiter connecting with the basement storage room.

The balance room, Fig. 4, is located with a northern exposure, so that the sun's rays do not interfere with the eyes nor strike the balances so as to cause unequal expansion of the beams. In this room are located two Sartorious balances, one torsion balance and a Harvard scale.

The dark room is fitted with double vestibule doors so as to exclude light; the bench tops are made of slate and are fitted with the necessary equipment for photographic work. The window lights are double, consisting of the regular sash sliding vertically and an auxiliary sash glazed with amber colored glass. Additional hinged sashes open into the room and are glazed with ruby glass. With this arrangement several combinations of light can be secured—daylight, amber, ruby, or a combination of ruby and amber together.

In the private metallurgical research laboratory, Fig. 9, the floors, ceiling and table tops are faced with white tile. A hood, 17 feet long, occupies one side of the room. Its walls are lined with slate and the table tops are tile. A special feature of the hood is that it has a reinforced concrete outlet for the fumes, has openings on two sides and is also open at the top. The side openings allow the wind to enter and strike a baffle wall where it is deflected upward, creating a very good draft. The outlet is 4 x 8 feet and looks like a burial vault except for the openings. The hood is well lighted with windows glazed with florentine glass. An electric furnace of the electrode type is used in the metallurgical department, which is also equipped with an electric hot plate, silica tube furnaces, etc.

The main chemical laboratory, Fig. 8, is lined with white tile throughout,

FIG. 9—PRIVATE RESEARCH LABORATORY

FIG. 10—SUPPLY ROOM

glazed tile being used on the walls and ceiling, and vitreous tile on the floors and table tops. The vitreous and glazed tile were tested before selection. Two tables, 5 x 10 feet, of reinforced concrete faced with tile, and supported by brick pedestals, are located in this laboratory, furnishing ample working space for many men. These are in addition to the benches which run the length of the room on two sides.

The microscopical laboratory, Fig. 7, contains a reinforced concrete table in the middle of the room, covered with a single slab of white glass weighing 850 pounds. The working benches are also of reinforced concrete construction, covered with glass. The microscopical laboratory is also equipped with a spectrometer of the latest model for studying the gaseous impurities of iron and steel. Hardness tests are made by the Shore scleroscope.

Corrosion Tests.

One room in the basement is used for corrosion tests and is furnished with shelves for crocks, holding various solutions, and at the present time several thousand samples are being tested under different conditions.

One accelerated test, Fig. 1, consists of suspending samples of various materials on half-inch glass rods which pass through bars at the end of iron spokes, the latter being screwed into a hub. The hub is connected to a water wheel, which slowly and automatically rotates the specimens. Three different tests are run on the wheel at the same time; one part dips the samples in well water, another in distilled water and a third in sea water. The wheel in turning exposes the samples immersed in the sea and well water to the air, where they are dried, while the distilled water samples are dried by burning natural gas which, incidentally, contributes carbon dioxide from the gas burned.

In the physical test division, Fig. 2, which is located in the basement of the research laboratory, the most modern equipment for the physical testing of iron and steel is installed. This includes a Riehle 100,000-pound tensile testing machine, a Landgraf-Turner alternating impact testing machine and a complete equipment for preparing samples.

The organization of the research department is made up of men who have specialized in the particular branch of the work they are called upon to do and the entire department is under the supervision of a director of research.

Remarkable Drilling Records

In the last issue of THE IRON TRADE REVIEW, page 120, was published a record of remarkable drilling tests made at Atlantic City at the railway equipment exhibit of the Master Car Builders' Association. These tests were made on a high duty drill built by the Foote-Burt Co., Cleveland, using drills manufactured by the Cleveland Twist Drill Co., Cleveland. Additional data concerning these tests have been received and a complete official record of the tests is contained in the accompanying table. The first tests were made for the purpose of demonstrating good shop practice and the drills were operated at speeds and feeds that would be economical under average shop conditions. To demonstrate the reserve efficiency and durability of the drills they were put through machinery steel and cast iron at extremely high rates of speed and feed.

The highest rate of speed in drilling was attained by a stock, 1¼-inch, flat twist high speed drill which successfully removed 70.55 cubic inches of cast iron in one minute, repeatedly cutting through a heavy billet at the record-breaking rate of 57½ inches per minute, nearly an inch per second. This drill was operated at 575 revolutions per minute with 1/10 inch feed per revolution and successfully withstood the terrific strain at this extreme speed and feed. Before attaining this maximum performance, which was approached gradually, numerous other drills manufactured by the Cleveland Twist Drill Co. were operated at the rates of 25, 32½, 33½, 35 and 47½ inches per minute, as shown in the accompanying table. In no case was the limit of strength reached, but the speed of 57½ inches per minute could not be exceeded on account of the inadequate capacity of the electric feed wires which carried the current to the motor driving the drill press.

Drilling at such high speeds and heavy feeds is not to be recommended as economical shop practice, and this performance will, in all probability, not be repeated in many shops. These results were only made possible by carefully established ideal conditions, such as the absolute rigidity of the machine, uniform and sufficient driving power, solid clamping of the work, perfect grinding of the tool and expert handling. The tests are of value chiefly as demonstrating the power and rigidity of the machine and the exceptional reserve strength of the drills.

Another noteworthy test was made with a 2½-inch milled drill taken from stock. It drilled 68 holes through a billet of machinery steel, 4¼ inches thick, without being reground. This drill was operated at 150 revolutions per minute with a feed of 0.015 inch per revolution and removed a total of 1,418 cubic inches of material. Although the drill was still in good condition, the test was terminated owing to the close of the exhibit. This test, however, demonstrated what can be done daily in any shop properly equipped and is indicative of what results should be expected in economical high speed drilling.

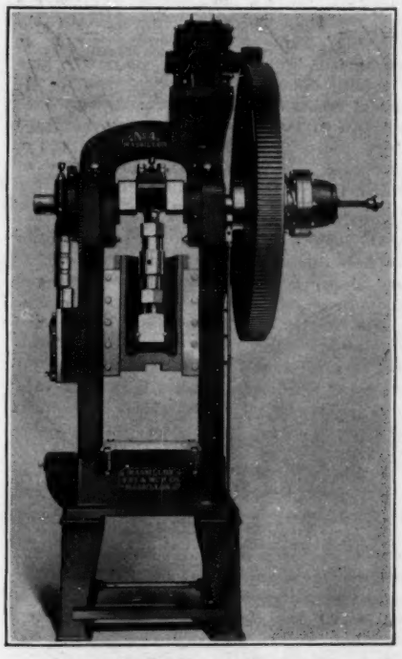
Official Record of Drilling Tests.

Size of drill, inches.	Type of drill.	Revolutions per minute.	Feed per revolution, inch.	Inches drilled per minute.	Peripheral speed in feet per minute.	Cubic inches metal removed per minute.
CAST IRON, 3½ INCHES THICK.						
1¼	Flat twist, high speed	500	0.050	25	163.5	30.68
1¼	Flat twist, high speed	325	0.100	32½	106	39.88
1¼	Flat twist, high speed	475	0.100	47½	155	58.29
1¼	Flat twist, high speed	575	0.100	57½	188	70.56
1½	Flat twist, high speed	300	0.030	9	117	15.90
1½	Flat twist, high speed	325	0.100	32½	127.6	57.43
1½	Flat twist, high speed	335	0.100	33½	131.5	59.19
1½	Flat twist, high speed	355	0.100	35½	139.4	62.73
1¾	Flat twist, high speed	235	0.100	23½	107.6	56.52
1¾	Flat twist, high speed	350	0.100	35	160	84.19
2 1/16	Flat twist, high speed	190	0.050	9½	115	39.90
3	Flat twist, high speed	120	0.100	12	94	84.82
MACHINERY STEEL, 4¼ INCHES THICK.						
1¼	Flat twist, high speed	350	0.030	10½	113.7	12.88
1 5/8	Flat twist, high speed	225	0.040	9	94.8	18.66
2 1/16	Flat twist, high speed	165	0.020	3¼	100	13.65
2 1/16	Flat twist, high speed	200	0.020	4	121	16.80
2½	Milled	150	0.015	2¼	98	11.04
2½	Milled	150	0.040	6	98	29.45
2½	Milled	175	0.040	7	114.5	34.36
1¾	Flat twist, high speed	275	0.030	8¼	125	19.84
3	Flat twist, high speed	150	0.030	4½	117.8	31.81
3¼	Flat twist, high speed	150	0.030	4½	127	37.33

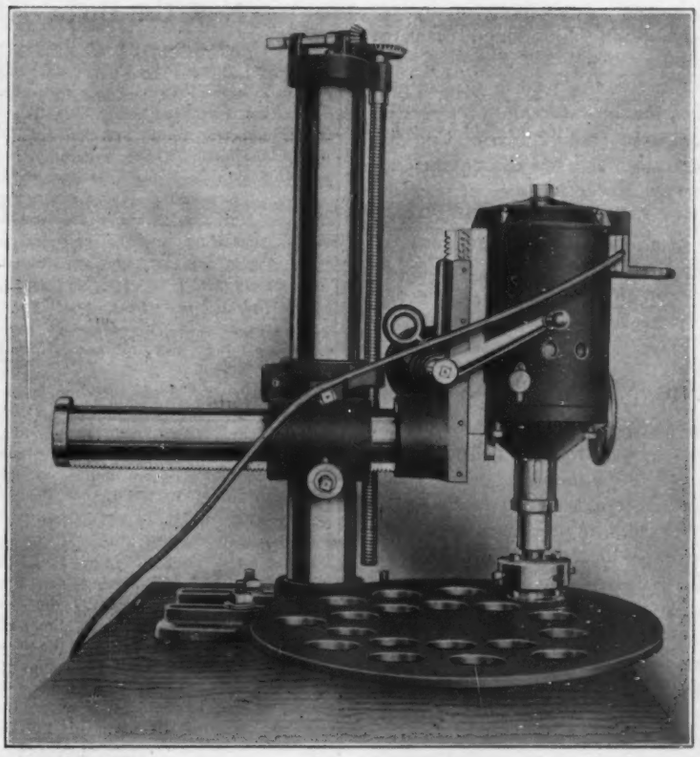
Motor-Driven Trimming Press

A motor-driven trimming press, equipped with a side shear, built by the Massillon Foundry & Machine Co., Massillon, O., is shown in the accompanying illustration. The equipment of the press with a side shear is optional and the presses are built in five sizes, varying in speed from 85 to 110 revolutions per minute with flywheels varying in weight from 600 to 2,000 pounds. The press illustrated has a minimum stroke of three inches and a maximum stroke of six inches, while the largest size has strokes of four and eight inches, respectively. The width between openings for the five sizes are respectively, 14, 16, 18, 22 and 26 inches with die spaces of 5½, 6, 6, 6½ and 7 inches and a distance between gibs of 8¾, 10¼, 11½, 14 and 15¼ inches. The motor is mounted on top of the main frame casting and is directly spur-geared to the crank shaft which carries the main ram between the uprights and the side shear on an eccentric cam outside of the upright. An adjustable friction clutch is mounted on the same shaft. The side shear has a stroke of 2½ inches for the smaller sizes of presses and three inches for the three larger presses. The weights of the machines vary from 3,250 to 11,500 pounds.

The Pullman Co. has declared the regular quarterly dividend of $2 a share, payable Aug. 15.



MOTOR-DRIVEN TRIMMING PRESS EQUIPPED WITH SIDE SHEAR



A PORTABLE, ELECTRIC RADIAL DRILL

A New Electric Drill

The portable, electric radial drill, shown herewith, and built by the Hisey-Wolff Machine Tool Co., Cincinnati, is equipped with a lip drill for cutting 2¼-inch holes in one-inch steel plate. Adjustment is provided in three directions and at all angles. The vertical drill feed is controlled by a rack and pinion actuated by a hand lever at the right of the motor casing. The vertical movement of the column arm is obtained by a bevel gear and screw which passes through the lower column casing. The handle for actuating the three adjustments is removable and is used interchangeably.

Universal Holder Socket

The Adams-Bagnall Electric Co., Cleveland, manufacturer of arc lamps, electric fans, etc., is now manufacturing a line of universal holder sockets known by the trade name of "Abolites." This holder socket is a unit which takes the place of socket, shade holder, and at the same time performs the function of a fixture for a single unit illumination. To obtain scientific illumination, it has always been necessary to secure proper relations between the lamp and the reflecting surface. On account of the different lengths of bases in some types of electric lamps, it has been found necessary to attach several kinds of separable holders to a regulation socket. The reflector in turn was suspended from the holder. The primary construction characteristic of the universal holder socket is the provision of a metal support for a reflector to replace variable holders.

The complete holder socket for industrial purposes is made of two parts, including the universal holder socket and a scientifically designed steel reflector. In the accompanying illustrations are shown 60 and 250-watt, bowl "Abolites." The use of this holder

SIXTY-WATT AND 250-WATT BOWL "ABOLITES"

eliminates all separable holders and one socket is universal for all lengths from 25 to 500 watts, inclusive. All weight is suspended from the holder socket and the reflector can be removed for cleaning without breaking any wire connections or disturbing the

holder socket. Intensive and extensive illumination is obtained with the same holder socket by merely changing the positioning device. In connection with the introduction of this line, the Adams-Bagnall Electric Co. has established a department of efficiency engineering for the purpose of studying industrial conditions and for co-operating with industrial managers in bringing their illumination to a plane where labor efficiency and factory output will be greatly increased.

Electric Melting in Sweden

In a paper presented before the Swedish Association of Mining Engineers, Axel Lindblod stated that progress in the electric melting of iron and steel in Sweden was very slow prior to 1907, but that since that time the industry had developed at a wonderful pace. In 1907 there were in operation in Sweden, 10 electric furnaces with a total capacity of 18.8 tons. At the beginning of 1911 the number of furnaces had increased to 95 and the output to 400 tons daily. The production of electric steel in Germany, he stated, comprised chiefly high quality steel which especially threatened the steel exports of Sweden as was instanced by the fact that the Stahlwerk Beeker, at Krefeld, which formerly used Swedish raw material, had signed a five years contract with the Electric Steel Works of Dommeldingen, Germany, for the purchase of all raw materials used in the production of crucible steel. The pig iron used at the latter works analyzed as follows: Carbon, 3.5 per cent; silicon, 0.6 per cent; manganese, 1.2 per cent; sulphur, 0.12 per cent, and phosphorus, 1.8 per cent. The analysis of the finished product now replacing Swedish material was as follows: Carbon, 0.07 to 0.10 per cent; silicon, 0.15 per cent; manganese, 0.20 to 0.35 per cent; sulphur, 0.008 to 0.01 per cent, and phosphorus, 0.008 to 0.010 per cent. The manufacture of small castings of electrical steel, comprising parts of motors and motor cars, has recently been commenced in Germany. This same branch of manufacture is now being undertaken in Norway and the Stavanger Electrical Steel Works are under erection for this purpose. In Sweden a two-ton Kjellin electric furnace has recently been erected at Trollhattan and in November, 1910, a new furnace was completed at Soderfers Bruk. The plant at Kortfors has been extended and is now using 1,000 electrical horsepower in the production of steel.

New Catalogs

COMMUTATING POLE GENERATORS.—The General Electric Co., Schenectady, N. Y., has issued a bulletin devoted to its line of commutating pole generators. It is claimed that commutating trouble is eliminated in this type of machine. These generators are designed for slow and moderate speeds, ranging in capacity from 20 to 150 kilowatts. They are wound for 125, 250 and 575 volts. This type of generators may be equipped with a sliding base or belt tightener, as desired.

PLANING MILL EXHAUSTERS.—A bulletin, issued by the Green Fuel Economizer Co., Matteawan, N. Y., describes the Green line of planing mill exhausters, both low speed and standard speed types. These exhausters are used for collecting large quantities of fine materials, such as shavings, sawdust, hair, wool, bark, straw, lint, etc., by means of an air current. The operation and principles of construction of the exhauster are fully described and illustrated.

CEMENT SPECIFICATIONS.—The Universal Portland Cement Co., Chicago, has issued a booklet containing standard specifications and methods of testing and analyzing Portland cement as adopted by the American Society for Testing Materials, the American Society of Civil Engineers, and the New York section of the Society for Chemical Industry. This volume contains much valuable data in a very convenient form, and should prove of value to all users of Portland cement.

WOOD-WORKING MACHINERY. — The 1912 catalog, recently issued by the Crescent Machine Co., Leetonia, O., illustrates and describes the extensive line of wood-working machinery manufactured by this concern. Additional tools included in this issue are band saw guards, a post borer and a 30-inch planer. The line of pattern shop equipment shown is extensive and consists of all of the requisite tools for the making of patterns and core boxes. The catalog is handsomely illustrated and the various tools are described in detail.

SECTIONAL CONDUIT.—The H. W. Johns-Manville Co., 100 William street, New York, has issued a circular devoted to its line of sectional conduit. This conduit is made of vitrified tile, salt glazed inside and out, and is made in half sections, which have rough edges and can easily be cemented together and made watertight. This conduit is designed to insulate and protect underground pipe systems, especially those for the transmission of heat. It is claimed that by its use 90 per cent of the heat ordinarily lost in transmission is saved.

FRICTION CLUTCH.—The Dodge Mfg. Co., Mishawaka, Ind., has issued a booklet devoted to its solid friction clutch of the Orton type. This clutch is designed for application to stationary and portable machine tools and countershafts, wood and iron pulleys, gears and sprockets, and may be employed in dividing up line shafts into successive sections. The clutch is made in a range of sizes that will transmit from two to 50 horsepower at 100 revolutions per minute and proportionately more at higher speeds. The booklet includes a price list.

FEED WATER HEATER AND PURIFIER.—A booklet entitled "Guaranteed Coal Saving," issued by Frank L. Patterson & Co., 26 Cortlandt street, New York, is devoted to the Patterson-Berryman feed water heater and purifier. In this heater the steam and feed water are separately inclosed and, therefore, do not come into direct contact with each other. It is claimed that this type of heater prevents all oil from making its way into the boiler and no complicated system of valves, traps, floats, etc., is necessary. The operation and construction of the heater is shown by illustrations in the bulletin.

TIN ROOFING.—The N. & G. Taylor Co., Philadelphia, manufacturer of tin roofing, has issued a very interesting booklet, entitled "Selling Arguments for Tin Roofing." It contains a large amount of information regarding this type of roofing and is designed to give sheet metal workers a number of arguments for use in pushing the sale of this product. The advantages claimed for tin roofing are durability, adaptability to any surface; moderate first cost, ease of application, low cost of maintenance, incombustibility, etc. The book contains a large number of illustrations showing representative installations of tin roofing.

ALUNDUM PRODUCTS. — Alundum refractories, manufactured by the Norton Co., Worcester, Mass., are illustrated and described in a 32-page booklet, recently issued. The melting point of this material is approximately 2,100 degrees Cent., and in addition it possesses high thermal conductivity. Having a comparatively low thermal coefficient, it is not affected greatly by changes in temperature. The material can be used to advantage for the refractory parts of small electric furnaces, for muffles, for crucibles for general laboratory use, and for electric furnace work. In addition to the physical refractory properties of alundum, it has the additional advantage of being sufficiently pure for filtering and numerous filtering devices are made for laboratory and experimental work.

TANKS.—A new catalog and price list of Dunning tanks has just been issued by the New York Central Iron Works Co., Geneva, N. Y., and Hagerstown, Md. These tanks are constructed for a variety of purposes including hot water, cold water, air, gas, fuel oil, gasoline, kerosene and naphtha storage and for use in laundries, sugar refineries, bleacheries, etc.; they are designed for use in fire protection systems, in elevator installations and are built for special uses. They are furnished black or galvanized, round or rectangular, with closed or open top and with or without coils. In addition to its line of tanks, the company manufactures tank heaters, riveted pipe, flumes, troughs, sand blasts, etc. The new catalog contains two interesting tables showing the capacities of tanks of various sizes.

SAFETY AS APPLIED TO GRINDING WHEELS.—An interesting, 26-page booklet has been issued by the Norton Co., Worcester, Mass., which contains descriptions and illustrations of safeguards which can be applied in the use of grinding wheels and machines. Various types of protection hoods are shown, together with instructions for properly mounting grinding wheels. The types of protection hoods include those constructed of steel bands that surround the periphery of the wheel: flexible adjustable link guards, riveted steel hoods, pressed steel hoods, etc. Dust systems for grinding and polishing rooms are also illustrated and described and numerous pertinent suggestions relative to speed changing, including a table of grinding wheel speeds, are included. The booklet should prove of value wherever grinding wheels are used and if the suggestions contained therein are carefully followed accidents will be greatly minimized or entirely eliminated.

Sentiment in the New York stock market was more optimistic last week but owing to the absence of important influences no great activity developed on the exchange. Prices of securities in general improved.

On Monday, the opening was strong but various factors combined to cause a reaction and the market closed with declines; Canadian Pacific shares went to the highest point in the history of that stock. On Tuesday, trading was active and prices advanced as a result of favorable crop and industrial reports. Wednesday, the market opened strong and active but reacted toward the close. Thursday, the announcement that New York City officials would award contracts for the proposed subway extension work to the Brooklyn Rapid Transit Co. caused a slump in prices followed by a recovery at the close. On Friday, Pittsburg Coal advanced sharply; Union Pacific reached the highest point in months. On Saturday, steel issues were unusually firm, due to favorable reports.

Money on call ranged from 2½ to 2 per cent. Time money was readily obtainable at higher rates but was not in great demand. The statement of the actual condition of clearing house institutions showed loans decreased $15,247,000; net deposits decreased $9,079,000; total reserve $441,341,000; excess of reserve $19,511,250, an increase of $7,798,450; and the percentage of reserve was 26.0, compared with 25.4 the previous week. Non-member banks and trust companies showed loans increased $2,212,200; net deposits increased $1,100,300; reserve on deposits decreased $1,496,900, and the percentage of reserve 19.1 against 19.4 the week previous. Commercial failures for the week were 205, against 233 the previous week and 249 the corresponding week last year. Bank clearings for the week showed an increase of about 13.5 per cent over the preceding week and 13.5 per cent over last year. Shares were sold to the number of 1,525,643, compared with 967,050 the preceding week and 2,711,000 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $19,308,000, compared with $10,094,000 the preceding week and $5,582,000 the corresponding week last year.

	Closing Quo. July 22	Changes in week	Annual Meeting date 1911		Stock Outstanding	Basis	Dividend Last	Div. Pay Date Last
Allis-Chalmers	8⅓	.....			$19,820,000		.....	.....
Allis-Chalmers, pr	28½	.....	Nov.	2	16,150,000	7 cum.	1¾ Q.	Feb., 1904
American Can	11⅜	+ ⅜	Feb.	1	41,233,300		1¾ Q.	.....
American Can, pr	87	+ ½			41,233,300	7 cum.	1¾ Q.	July, 1911
Am. Car & Fdy	57¾	+1¼	June	29	30,000,000		½ Q.	July, 1911
Am. Car & Fdy., pr	118¾	+ ½			30,000,000	n. c.	1¾ Q.	July, 1911
American Loc	41½	+ ½	Oct.	17	25,000,000	5	1¾ Q.	Aug., 1908
American Loc., pr	108	—2			25,000,000	7 cum.	1¾ Q.	July, 1911
American Ship	64¾	.....	Oct.	11	7,600,000	4	2 Q.**	June, 1911
American Ship, pr	111	.....			7,900,000	7 cum.	1¾ Q.	July, 1911
Am. Steel Foundries	39⅜	+1¼	Dec.	7	17,184,000		1 Q.	May, 1911
Barney & Smith	20	.....	June	6	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr	87	.....			2,500,000	8 cum.	2 Q.	June, 1911
Bethlehem Steel	32½	—1¼	April	4	14,862,000		.....	.....
Bethlehem Steel, pr	62⅝	.....			14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	46½	+1¼	Mar.	21	45,000,000	5	1¼ Q.	Aug., 1911
Cambria Iron	44	.....			8,468,000*	4	2 S. A.	Apr., 1911
Chicago Pneumatic Tool	51¾	+ ⅜	Feb.	20	6,485,800	4	1 Q.	July, 1911
Colorado Fuel	35½	+ ⅛	Oct.	14	34,235,500		1¾ Q.	Apr., 1902
Crucible Steel	13	+ ¼	Oct.	18	24,578,400		3½.	.....
Crucible Steel, pr	83	+1			24,463,500	7 cum.	1¾ Q.	June, 1911
Empire Steel	5	.....	Feb.	22	1,254,770		.....	.....
Empire Steel, pr	50	.....			2,500,000	6 cum.	1 S. A.	July, 1911
Fay & Egan	70	.....	Feb.	21	1,000,000	6 cum.	3 S. A.	Feb., 1911
Fay & Egan, pr	110	.....			1,000,000	7 cum.	1¾ Q.	Feb., 1911
General Electric	163¼	+1½	May	9	65,179,600	8	2 Q.	July, 1911
Harbison-Walker	45	.....	Jan.	16	18,000,000		½ Q.	June, 1911
Harbison-Walker, pr	98	.....			9,600,000	6 cum.	1½ Q.	July, 1911
International Pump	42½	+ ⅛	Dec.	12	17,762,500		1 Q.	Nov., 1910
International Pump, pr	88¾	— ½			11,350,000	6 cum.	1½ Q.	Aug., 1911
Lackawanna Steel	42	.....	Mar.	8	34,978,000		.....	.....
Lake Sup. Corp	27	+ ⅛	Oct.	4	40,000,000		.....	.....
New York Air Brake	75	.....	Mar.	8	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	94	.....	Feb.	9	8,500,000	6	1½ Q.	June, 1911
Niles-Bement-Pond, pr	104	.....			2,000,000	6 cum	1½ Q.	May, 1911
Otis Elevator Co	71	—1	Mar.	20	6,375,000	1	1 Q.	July, 1911
Otis Elevator Co., pr	100	—2			6,310,000	6 n. c.	1½ Q.	July, 1911
Pa. Steel	60	.....	May	8	10,750,000		.....	.....
Pa. Steel, pr	106½	.....			16,500,000	7 n. c.	3½ S. A.	May, 1911
Pittsburg Coal Co	20⅛	+ ⅛	Feb.	10	28,104,600		.....	.....
Pittsburg Coal Co., pr	86½	+3¼			27,071,800	7 cum.	1¾ Q.	July, 1911
Pressed Steel Car	37½	+1½	Feb.	15	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	102½	+ ½			12,500,000	7 n. c.	1¾ Q.	May, 1911
Pullman	162	+1½	Nov.	8	120,000,000	8	2 Q.	Aug., 1911
Railway Stl. Spring	37½	+1¼	Mar.	2	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	101¼	.....			13,500,000	7 cum	1¾ Q.	June, 1911
Rep. Iron & Steel	30⅜	+ ⅜	Oct.	18	27,191,000		.....	.....
Rep. Iron & Steel, pr	94½	+ ⅜			25,000,000	7 cum.	1¾ Q.	July, 1911
Sloss-Sheffield	50	+1⅛	Mar.	15	10,000,000	5	1¼ Q.	Sept., 1910
Sloss-Sheffield, pr	112	.....			6,700,000	7 n. c.	1¾ Q.	July, 1911
U. S. Pipe & Fdy. Co	16	.....	June	28	12,106,300		1 Q.	Dec., 1910
U. S. Pipe & Fdy Co., pr	53½	—2⅜			12,106,300	2	1¾ Q.	June, 1911
U. S. Steel	80⅞	+⅛	April	17	508,302,500	5	1¼ Q.	June, 1911
U. S. Steel, pr	18¾	+ ⅛			360,281,100	7 cum.	1¾ Q.	May, 1911
U. S. Steel 5s	106	+ ⅛			463,798,000	5	.....	.....
Va. Iron, Coal & Coke	90	+3	Sept.	19	9,073,680		5. †	Oct., 1907
Westinghouse Electric	75½	+ ¼	July	21	3,998,700*		1¾ Q.	July, 1911
Westinghouse Air Brake	151	+2¾	Oct.	2	13,750,000*		5 Q. ‡	July, 1911

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Includes 2½ regular, 1½ extra and 1 special

Copper Stocks.

New York.—Amalgamated Copper closed 69⅜, a net gain of ⅝.

Boston.—Butte Coalition closed 18¼, no change; Calumet & Arizona closed 58, a net loss of ½; Calumet & Hecla closed 455, a net gain of 4; North Butte Mining closed 33¼, a net gain of ¾; Quincy Mining closed 73½, no change.

Financial Notes.

The National Carbon Co. has declared the regular quarterly dividend of 1¾ per cent on its preferred stock, payable Aug. 15.

The National Lead Co. has declared the regular quarterly dividends of 1¾ per cent on its preferred stock and three-fourths of 1 per cent on its common stock, the former payable Sept. 15 and the latter on Sept. 13.

The National Enameling & Stamping Co. has declared the usual dividend of 7 per cent on its preferred stock, payable in four quarterly installments of 1¾ per cent each, on Oct. 1, Jan. 1, April 1 and July 1, next.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades.

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THE AVERAGE PAID CIRCULATION OF THE IRON TRADE REVIEW FOR THE ISSUES OF THE FOLLOWING MONTHS WAS:

May, 1910	5,827
June	5,842
July	5,864
August	5,875
September	5,895
October	5,955
November	5,993
December	6,026
January, 1911	6,058
February	6,072
March	6,091
April	6,108
May	6.112
June	6,124

July 27, 1911

The Business Situation

Nearly all the signs of the times indicate that the second half of the year will prove to be a good one for the iron and steel industry, at least relative to the first half. Liquidation of unsound conditions seems to have run its full course. Prices of pig iron have fallen below the cost of production in the valleys, and are near the cost line in most other districts. After a long decline in merchant furnace production, the output seems to be clearly below the consumption, even though reduced temporarily, as it always is at this mid-summer period The Eastern Pig Iron Association at its meeting early this month found that stocks have materially declined during June, the month's statistical showing being the best of the year. In the south, stocks have been practically stationary for several months. In the valleys there are only six furnaces in blast out of 18, which furnishes assurance that valley stocks will be reduced.

Thus the general showing of pig iron is that a turning point has been closely approached. It has not been passed, for buying has not yet started on any extensive scale. Observation shows, that in nearly every instance of a general turn in pig iron, southern iron leads the movement. At the present time, consumers show no distinct purpose of buying southern iron for extended delivery. A few days ago the directors of the leading consuming interest in southern iron met in New York and decided not to buy for the present, although the $10, Birmingham, price which had been the objective point of many buyers, had been reached. The decision applies only for the present, and the subject is to come up again shortly. So it appears that conditions are ripe for a turn in pig iron, but the turn has not yet come.

In finished steel products, the business of the past fortnight has been chiefly in the placing of contracts. These have been coming in freely, indicating that buyers expect at least fairly heavy requirements and are satisfied with present prices. Actual orders and specifications have been very light thus far this month, corresponding with the season of the year, and showing that the heavier buying observed in June was a detached movement, an episode, rather than the first stage in a general buying movement.

An unfavorable feature of present conditions is the strenuous effort being made in some quarters to make the situation appear better than it really is. The public is learning to discriminate sufficiently to avoid accepting at par favorable statements which do not agree with personal observation, merely because previous statements emanating from the same sources proved to be correct. The multitude of encouraging statements which are being made at the moment, instead of proving reassuring, are likely to arouse suspicions that the activity in circulating favorable statements is due, at least in part, to there being something unfavorable to conceal or gloss over. Some of the intensely favorable statements being circulated as to the state of the wire trade are conspicuous in this connection, for not only is the wire trade dull but it is merely normal, as it should be at this season. It used to be the custom in the wire trade for the mills to agree each to close for a certain number of weeks during July, August and September, in order to sustain a market which could take care of itself during the remaining months of the year.

Thus in finished steel, as in pig iron, conditions appear favorable for heavy buying, but the heavy buying has not yet started.

The steel interests are confident that there will be heavy railroad buying in the second half of the year. It is possible that there is direct information that there has been a change in the railroad policy as to buying. It is universally admitted that a few men control the policy of practically all the railroads in this respect, and for several months there has been speculation in some quarters as to when the word would be given. Apart, however, from a general railroad buying movement which would be the result of formal decision by a group of railroad magnates, there are physical reasons for expecting better railroad buying. In 1905-6-7, railroad buying was extremely liberal, and the railroads were put in exceptionally good condition, whereby when general business fell off so sharply in 1908 a large surplus of rolling stock was developed. The total freight business of the country, however, grows in bad times as well as in good times, only more slowly, and there is never a period of years in which freight tonnage does not grow. The statistics show that the total freight ton-mile-

age of the country doubles regularly in between 10 and 15 years, so that the freight tonnage which in 1906-7 was the product of exceptionally high pressure in general business may be exceeded by a tonnage in 1911-12 which is the product only of moderately high pressure in general business. Apart from the prospective need for increased facilities, however, there is the need for replacing worn-out equipment. This the railroads have not been doing in full. One of the leading systems, whose command of funds is unusually good, is understood to have no less than 4,500 vacant numbers in its car series, a circumstance which is very suggestive indeed. Eventually the railroads will have to buy with considerable liberality and it may well be that the next few months will see the movement.

A resumption of railroad buying on only a fairly liberal scale would, by itself, be almost sufficient to bring the steel industry up to the point of operating at full capacity. It has been noted in these columns that in the eighties the railroads took fully 60 per cent of the product of the iron industry, while our estimate indicated between 35 and 40 per cent for the years 1906-7. In the past, few estimates have generally been between 10 and 15 per cent, so that there is easily room for a 25 per cent increase; i. e., as the steel industry has lately been operating at about 65 per cent of capacity, a moderate degree of railroad buying, without any other change, would bring the industry up to about a 90 per cent gait.

Railroad Building Not Stopped

For several years past, the cry of the railroads that conditions are unfavorable for the building of new road has created the impression that very little new construction has been under way. This does not appear to be the case. Poor's statistics, just out for the year 1910, are a safe index, and show that there has been a fair amount of new construction right along. In the table below, we give Poor's statistics of new railroad construction for calendar years. These figures are not the more familiar ones of "annual increase in mileage," which include various adjustments, such as abandonment, elimination from the reckoning through electrification, remeasurements, old roads reporting for the first time, etc. The figures given represent actual new railroad construction in the calendar year mentioned:

	Miles.
1900	4,157
1901	4,906
1902	5,076
1903	4,675
1904	5,003
1905	5,050
1906	5,643
1907	5,499
1908	3,654
1909	3,476
1910	3,918

Thus the new construction in 1910 exceeded two-thirds the best record made by any year in the preceding ten. In the eight years 1900 to 1907, inclusive, new construction amounted to 40,009 miles, or 5,000 miles a year, while in 1908 and 1909 the average was 3,565 miles, 71 per cent as good, and in 1910 the construction was 3,918 miles, or 78 per cent as good. These are really excellent showings in the circumstances. Of course they are not the result of great projects. With 230,000 to 240,000 miles of railroad in the United States, it is only natural that at this point and that point extensions are absolutely called for. The new construction in 1910 represented about one mile against every 60 miles already in existence.

In the past three years, the increase in second track, sidings, etc., has averaged more than 3 000 miles a year, nearly 3,500 miles, and this of course represents railroad expansion also. The annual building of track in the past three years has thus exceeded 7,000 miles a year, with last year a trifle the best of the three. Assuming the use of rails averaging 85 pounds per yard, the rail consumption was about a million tons a year. Estimates made in our columns in the past have shown that the steam railroads are wearing out about a million tons of rails a year, so that there is two million tons a year in these two items, while as contributing to rail tonnage there is also the consumption by electric lines and by various industrial enterprises, together with the exports of both standard and light rails.

It may be observed that Poor's new statistics give the total freight ton-mileage of the country, in the fiscal year 1910 of the various railroads, at a gain of about 12 per cent over 1909, and of 10 per cent over 1907, the best previous year This increase in traffic, of course, is wearing out the rails so much faster than formerly.

The total number of cars and locomotives reported at the close of the year named was as follows:

	Locomotives.	Cars.
1907	58,301	2,131,487
1908	61,030	2,224,263
1909	60,601	2,230,018
1910	63,030	2,348,778

In 1909 there was an actual decrease in the total number of locomotives, but in 1910 the loss was made up, there being a gain of 2,000 for the two years, which is two-fifths the average rate of increase in the preceding ten years. In cars there was an increase of 118,000 in 1910, against a negligible increase in the preceding year. The average rate of increase in the preceding 10 years was 90 000 cars a year. These figures of totals are not indicative of actual railroad operations for the reason that old wooden cars are being replaced with steel cars of much greater capacity, and the amounts of replacement and of addition of new numbers, respectively, may vary greatly from year to year. The showing for 1910, however, cannot but be considered fairly good, for with an increase of 118,000 cars there must have been considerable replacement also.

The iron trade has possibly been misled somewhat in its estimate of the total amount of railroad buying in recent times, involving iron and steel, first by the fact that railroad managers have been insisting all along that they cannot buy, and second by the fact that with the very great increase in iron and steel demand from other sources the railroad demand is diluted and does not make as spectacular a showing as formerly.

WORLD-WIDE PEACE

Would be Promoted by Commercial Activity, Said President Farrell.

At the recent conference at Brussels, President James A Farrell, of the United States Steel Corporation, spoke in part, as follows:

The educational value of gatherings such as this, where matters pertaining to the industry may be discussed in their various aspects, is very great and conducive to universal welfare. For upon the shaping of the relations obtaining between the members of the great iron and steel industry depend to a large extent its future destinies, and these relations are seldom strained, but almost without exception improved by mutual acquaintance; for as soon as we become convinced that there is no elemental antagonism of interests, but that, on the contrary, their interests are reciprocal, a co-operation along the line of the whole development of the industry will be the natural result.

The assembling of this congress, comprising as it does delegates from the great steel producing countries of Great Britain, Germany, France, Belgium, Austro-Hungary, Russia, Spain, Italy and the United States, takes place at a time when the mind of the world is occupied with the great movement for promoting international peace and conciliation, and relations of comity and good fellowship between nations.

The Hague conference has gravely declared that the maintenance of peace is the supreme duty of all nations.

In response to the demands of public opinion, governments and public-minded citizens of all countries are advocating plans for international peace and arbitration, which not long ago were regarded as impractical and visionary.

Concurrently, momentous changes have taken place in the steel industry, and the belief now prevails generally in that industry throughout the world that commercial peace is as necessary to the success and stability of the industry as the practice of settling international controversy by the sword is costly.

The movement for industrial harmony and conciliation goes hand in hand with the world-wide effort being made for political peace, since whatever may be the vocal professions of those contending for political peace and arbitration, it would indeed be a fallacious belief if it were not conceded that one of the greatest and most important essentials to co-operation between nations is the establishment of commercial peace and comity and good fellowship through the efforts of such assemblages as this, representing as it does influential people of many nations, engaged in one of the most important industries of the world, who believe that the fundamental principles which should regulate the rights and duties of nations in their mutual intercourse are those of evolution, which can best be broadened by the same application of those principles, to the rights and duties governing the economical processes of production, distribution and consumption of their products.

The prime object of this International Congress assembled here today is, as I understand it, to consider economic conditions, and to study the fundamental principles underlying co-operation amongst the steel manufacturers of the world. Such a convention pre-supposes a belief that industrial peace and co-operation are just and profitable both to the consumer and producer alike, and that the world at large would gain more from the exercise of a constructive policy that protects trade and develops commerce than from militant trade rivalry in the world's markets. Such a policy is, of course, diametrically opposed to the erroneous notion which has been suggested in some quarters, that it is proposed to control prices or hamper commerce.

The cultivation of amicable personal, as well as co-operative, relations, is a step towards industrial peace and commercial history. Thus this Brussels conference may be regarded as the inauguration of a new era in industrial and commercial history, and if it is recognized that war between nations is obsolete and moribund, then it must be recognized that destructive competition in trade channels is like war, and dislocates the economic processes of production, distribution and exchange the world over.

Intelligent management appreciates that profits if they are to be sustained, must be subrogated to justice and humane treatment, co-operation with one's competitors, pension funds for the superannuated, systematic endeavor for the prevention of accidents, voluntary compensation for the injured, recognition of faithful service, elimination of Sunday work, profit-sharing, sanitary surroundings and hospitals. All these are manifestations of a humane and efficient policy.

This proposed association will consider and develop these questions, and its decisions and example will have a widespread and lasting influence.

Youngstown Iron & Steel Co. Election

At the annual meeting of stockholders of the Youngstown Iron & Steel Co. held at Youngstown, O., last week, the following directors were elected: L. E. Cochran, John O. Pew, Mason Evans, H. W. Heedy, C. B. Cushwa, J. F. Danielson and C. A. Cochran. The following officers were elected: President, L. E. Cochran; first vice president and general manager, John O. Pew; second vice president, H. W. Heedy; treasurer, Mason Evans; secretary, C. A. Cochran; general superintendent, C. B. Cushwa; superintendent of the pressed steel department, J. F. Danielson.

COMMISSION BILL

Will be Reported to Senate During Present Session.

Washington, July 24.

In an interview recently, Senator Clapp, chairman of the committee on interstate commerce, said that the Newlands bill to establish an interstate trade commission would be reported out of his committee during the present session. While not personally in favor of government by commissions, the senator expresses himself as heartily in sympathy with the object and ends sought by the author of the bill, and cited some instances which make some such measure desirable. He spoke of the Steel Corporation as owning such a large proportion of the sources of supply as to be able to fix rates on its products, and said that when any combination becomes a monopoly, then the people, through the regular channels of government, have a right to say what prices they will pay—as a matter of moral right which the people may exercise at will. While recognizing the necessity for the combinations of capital to carry on large enterprises, the senator denied the necessity for monopolies, but denounced them as vicious and subject to the control of the people. He said that every monopoly is to some extent in restraint of trade, and the government has the right and power to intervene in all such cases, even to the extent of fixing prices. Senator Clapp has recently succeeded to the chairmanship of the interstate commerce committee of the senate, which has charge of the bill, and he predicts that the subject will be the absorbing topic at the session next winter.

Dismantling Old Mill

The Ewald Iron Co., of Louisville, which owns the old rolling mill near Eddyville, Ky., formerly operated by the late Louis P. Ewald, of Louisville, is dismantling the plant. The equipment is being broken up and will be sold for scrap. The material will be brought down the Cumberland river and up the Ohio to Louisville. The plant is one of the oldest in this part of the country, but had not been in operation for many years.

The Pine Mountain Water Co., J. I. Wagy, Bakersfield, is preparing to lay an 8-inch water pipe line, 40 miles in length through the oil fields.

HIGH QUALITY

Of Bessemer Rails Being Made From North Coast Cuban Ore.

Excellent results in Bessemer steel rail manufacture are being obtained from the north coast Cuban ores, which are now being shipped more freely to eastern steel makers. The north coast Cuban ore is of a low phosphorus Bessemer quality, running not over 0.004 per cent in phosphorus and contains other elements that render it especially adaptable to Bessemer rail manufacture. This ore is now being freely used at the Sparrows Point plant of the Maryland Steel Co. and a very high quality of Bessemer rail is being manufactured there from it. Shipments of Cuban ore to this country have been of an increased tonnage during the past two months and much of this has come from the north coast operation. The steel companies working the Cuban ore properties are not bringing in much surplus over their needs at present, but some ore is being piled at the mines to await more favorable industrial conditions in the steel trade.

Award Contracts for Government Colliers

Formal contracts have finally been placed by the navy department for four colliers and two sea-going tugs on bids entered several weeks ago. Two of the colliers were awarded to the Newport News Shipbuilding & Dry Dock Co., and two to the Maryland Steel Co. The two sea-going tugs went to the New York Shipbuilding Co. The combined steel requirements of these six vessels are about 25,000 tons of plates and shapes. Each of the colliers will take 5,500 tons of this material. The Central Iron & Steel Co., Harrisburg, will furnish a good portion of the plates for the boats to be built by the Maryland Steel Co., while the plates and shapes for the other vessels will be divided between different makers.

Steel Works Taken Over

The Washington Steel & Ordnance Co. has purchased and taken over the steel works at Giesboro Manor, in the District of Columbia, heretofore owned and operated by the Firth-Sterling Steel Co., as the ordnance works of that company. The officers of the Washington Steel & Ordnance Co. are as follows: Lewis J. Firth, president; James W. Kinnear, vice president; Harry F. Clark, secretary and treasurer. The directors are as follows: Lewis J. Firth, Florence, Italy; James W. Kinnear, Eben B. Clarke and James E. Porter, Pittsburg; William A. Burton, Sheffield, England; Alexander G. McKenna and Charles V. Wheeler, Washington, D. C.

The works management remains unchanged and the business will be conducted without interruption.

The Plants of the Wickwire Steel Co.

The Wickwire Steel Co., Buffalo, N. Y., has issued a very handsomely illustrated and printed booklet describing the Wickwire brand of pig iron. The cover in colors is especially attractive. The front piece is a bird's eye view of the plant, located on the Niagara river, about half way between Buffalo and Tonawanda. Other views, of the ore docks, ore and iron storage yards, the furnace plant, together with those of the steel steamers Thos H. Wickwire and Thos. H. Wickwire Jr., are given. Considerable information regarding the plant is presented. The furnaces occupy a tract of 90 acres with extensive docks, equipped with modern ore-handling machinery, facing upon the Niagara river. Storage is available for over 700,000 tons of ore. The first pig iron was made in October, 1898, in the Harriet X. furnace, which is 80 feet high by 20 feet, 6 inches base. Later the Harriet Y. furnace, which is 85 feet high by 21-foot bosh, was erected. The company now has an output of 350,000 tons of iron a year. Analyses are given of the company's brand of foundry, forge, basic, malleable and Bessemer and special grades of pig iron. All the company's iron is cast by machine.

In the July 6 issue of THE IRON TRADE REVIEW it was erroneously stated that W. M. Armstrong has become president of the Corrugated Bar Co., St. Louis. Mr. Armstrong, on March 17, was elected treasurer of the company. The other officers are: President, D. E. Garrison Sr.; vice president, D. E. Garrison Jr.; second vice president, A. L. Johnson.

Copper exports for the week ending July 20, were 8,041 tons, an increase of 2,909 tons; from July 1 to July 20, 21,983 tons, an increase of 6,508 tons; from Jan. 1 to July 20, 177,827 tons, an increase of 33,128 tons.

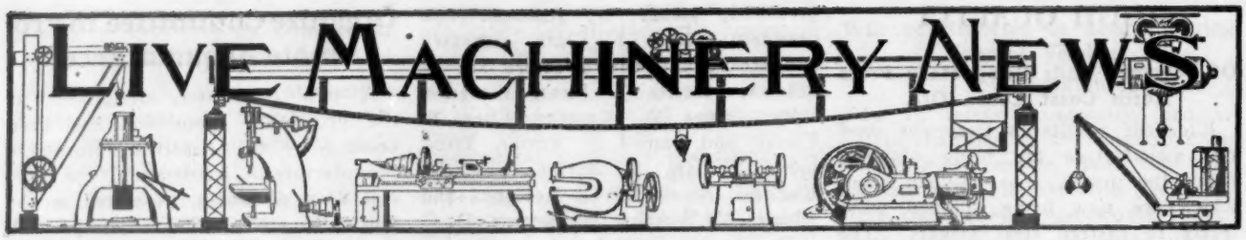
Organize Committee to Promote Acquaintance

A new committee, designated as the promotion committee, has been created by the American Hardware Manufacturers' Association, the special duty of which, as stated in the announcement by the secretary, "will be the promotion of acquaintanceship at conventions of the association, through performing or arranging for proper introductions among the delegates and visitors on these occasions." The members of the committee are Geo. H. Harper, chairman, National Enamel & Stamping Co., Baltimore; Thos. B. Coles, American Steel & Wire Co., New York; Clarence A. Earl, Corbin Screw Corporation, New Britain, Conn.; Rowland Gerry, Jones & Laughlin Steel Co., Pittsburg; Chas. W. Hubbard, American Axe & Tool Co., Inc., Glassport, Pa.; R. B. Jones, Clyde Cutlery Co., Clyde, O.; Chas. P. King, American Iron & Steel Mfg. Co., Atlanta, Ga.; Samuel D. Latty, Kirk-Latty Mfg. Co., Cleveland; A. C. McKinnie, Stanley Works, New Britain, Conn.; Chas. B. Parsons, P. & F. Corbin, New Britain, Conn.; J. T. Rader, Miller Lock Co., Philadelphia, and R. G. Thompson, The Lufkin Rule Co., Saginaw, Mich.

Mining Engineers Meet.—The American Institute of Mining Engineers will hold its one hundred and first meeting in San Francisco, Oct. 10 to 16, inclusive. Headquarters will be at the St. Francis hotel. The program will include a trip to the Bakersfield oil fields and through the gold-dredging district near Folsom. On Oct. 16 a delegation of the Institute will depart on the Japanese trip.

The United States Steel Corporation is selling $9,753,000 of debenture bonds of the Illinois Steel Co., now in its treasury. These debentures bear 4½ per cent interest. Part of the proceeds will be used to redeem $6,900,000 5 per cent non-convertible debentures of the Illinois Steel Co., and part for capitalizing new construction completed.

The Pawtucket Foundry Co., Pawtucket, R. I., has filed a voluntary petition in bankruptcy in the United States District Court of its district. The company has liabilities of $91,919 and assets of $51,289. Wm. H. Thornley, of Providence, has been named temporary receiver.



Business in the New York machinery market continues quiet and there is an absence of prospects likely to mature in the near future. It is reported that two leading manufacturers of electrical machinery may soon inquire for machine tool equipment but no definite information is obtainable regarding this business. Builders of small power units have estimates in on a considerable total of inquiries but there are no indications as to when contracts will be awarded. In Pittsburg, there is a good demand for electrical equipment but actual sales in other lines continue at a minimum. The most important prospect in that market is the proposed new open-hearth steel plant to be erected by the Youngstown Sheet & Tube Co., on which definite action will soon be taken. In Cleveland and Detroit, optimistic sentiment prevails, due mainly to increasing activity on the part of motor car manufacturers. Business in both cities is seasonably fair. The Ford Motor Car Co. has placed a fairly large order for special machinery with a Cleveland manufacturer and a quantity of other prospective business is expected to materialize in orders. Several small machine shops and manufacturing establishments in Cleveland and its vicinity are contributing desirable orders. In Chicago, little change is reported, and machinery continues to be sold mainly in small lots.

Machine Tools

The Oakes-Enders Automobile Co., 436 Knights of Pythias building, Indianapolis, advises that it will be in the market for a turret lathe and a small automatic screw machine.

William Lengaeher, 222 South Morgan street, Chicago, is building a small machine shop at the northeast corner of Aberdeen and Adams streets. The building will be 100 feet long and will cost $15,000. It will be equipped with machine tools, shafting and motors.

The Cleveland Taxicab Service Co., Walnut avenue and East Seventeenth street, Cleveland, is erecting a new garage. A quantity of machinery including lathes and other tools for repairing will be purchased, although the company is not yet ready to announce specifications. A gas engine will also probably be purchased.

Foundries

Crane Co., Chicago, is building a five-story brass foundry, 70 x 130 feet, at 157 North Desplaines street, Chicago.

Plans are being prepared by the Sauer Power Generating Co., Rosetta street, Pittsburg, for a small foundry for making gray iron castings and the company likely will build a small foundry for brass work. A site has not yet been selected.

The plant of the Darlington Foundry Co., Darlington, Pa., has been purchased by Pittsburg interests, which will operate the works as a steel casting plant. The main building is 90 x 200 feet and is equipped with cupolas, molding machines, electric cranes, compressor, chipping hammers and shafting for the operation of the machine shop. The power house is 30 x 40 feet, equipped with two 80-horsepower boilers, a 25-horsepower horizontal engine and generator, pumps and water tower. The new owners are having plans prepared for the installation of furnaces and other equipment for the manufacture of steel castings.

Water Works

The village of Herrin, Ill., expects to build a steam pumping plant. R. L. Adams is city engineer.

Bids for the installation of a municipal water works, mains, etc., will soon be received by the city of Orland, Cal.

A municipal water system, which it is estimated will cost $375,000, is to be built at Johnson City, Tenn. Work will begin in the next three months.

A new pump may be installed in the plant of the Ashland Water Co., Ashland, Ky. Other improvements are in contemplation, but no definite plans have been made.

The St. Bernard Coal & Mining Co., Earlington, Ky., will be in the market for a pump to be installed in the water-works plant which it operates there. Frank D. Rash is engineer of the system.

Bids will be received until Friday, Aug. 4, by Joseph G. Armstrong, director of public works, Pittsburg, for the installation of the following equipment in the Ross pumping station, Pittsburg; two water tube boilers in one battery, operated by mechanical stokers; one steam turbine centrifugal pump with a capacity of 100,000,000 gallons daily, and apparatus for handling coal and ashes mechanically at the Aspinwall pumping station.

New Works

Bids are being received by the Dayton Pipe Coupling Co., Dayton, O., for a one-story steel forge shop to cost $10,000.

An electric crane and other equipment will be installed at the new plant of the Chicago Bridge & Iron Co., Greenville, Pa.

The Seattle Car Mfg. Co. has completed plans for a steel building to be used as a forge and machine shop. It will be erected at Renton, Wash.

The Patterson Drill Co. will erect a plant at Bakersfield, Cal., for manufacturing a patented oil well tool, the invention of W. A. Patterson of Brawley, Cal.

The Eastman Kodak Co., which is building an addition to its plant and a warehouse at Rochester, N. Y., is in the market for an electric crane and other equipment.

The Pittsburg Steel Foundry Co. is building a steel and reinforced concrete pattern storage building at Glassport, Pa. The Riter-Conley Mfg. Co. has the contract for the building, which will be 100 x 95 feet.

The Lanston Monotype Machine Co., Philadelphia, has had plans prepared for a plant which it will erect at Twenty-fourth and Locust streets, that city. It will be 176 x 268 feet with six stories and basement.

The Chicago & Great Western rail-

road is remodeling and extending its machine shop, blacksmith shop and boiler house at Oelwein, Ia. The blacksmith shop will be 230 x 120 feet and the machine shop 35 x 400 feet.

The Adams Fire Fighting & Instrument Co., a $100,000 concern recently incorporated in Louisville, Ky., expects to manufacture appliances for use in fighting forest fires. Plans for a factory have not yet been completed.

The Beaver Dam Mfg. Co., Beaver Dam, Wis., has made additions to its plant consisting of a store room and a machine shop. The company is now installing a bulldozer, cushion hammer, drop hammer and other machines.

The Cudahy Packing Co., Chicago, expects to commence work soon on a car repair plant, which will be erected at East Chicago, Ind. One steel and reinforced concrete building, 500 x 150 feet, will be built at the present time.

The Standard Corrugated Pipe Co., San Francisco, is about to start work on a new plant to be erected at South San Francisco. A corrugated iron building, 50 x 80 feet, with two large wings and yard space will comprise the plant. The company will manufacture corrugated iron pipe, arches, water flumes, water pipe and well casing. Rolls and riveting machines will be installed as well as a number of machine tools. Much of the machinery is already on the ground but some will have to be purchased. Lists of requirements may be obtained at the offices of the company, 402 Sheldon building, San Francisco.

Power Plant Equipment

Vallejo, Cal., will erect a municipal electric lighting plant.

Syracuse, Kas., is preparing to install a new electric lighting plant.

George Johnson, Arlington, S. D., will install an electric lighting system.

The city of Newton, Ia., will install a 250-horsepower water tube boiler in the municipal electric light plant.

Grove, Okla., has voted a bond issue of $35,000 for the installation of an electric lighting plant and water works.

The Commonwealth Power Co., Trowbridge, Mich., is making preparations to rebuild its plant, recently burned.

The Morrillton, Ark., Light & Power Co. is making preparations for the installation of an additional generating unit consisting of a 150-kilowatt alternator and Corliss engine. Judge W. L. Moose is president.

The Water User's Association, Phoenix, Ariz., will receive bids for machinery for a 900-horsepower plant up to Aug. 8.

The Vivian Ice, Light & Water Co. has been organized at Vivian, La., with $50,000 capital stock and will establish a lighting plant and a water system.

The San Francisco Gas & Electric Co., San Francisco, has had plans prepared for a new power plant, bids for which will be called at once. Estimated cost is $70,000.

The Consumers' Power Co., St. Paul, Minn., which controls the Northern Heating & Electric Co., will expend $10,000,000 in improving its power plants in the state.

The Georgia Power Co., which is constructing a hydro-electric plant near Tullala Falls, is seeking to enter Chattanooga, Tenn. If a franchise is secured a sub-station will be built there for the distribution of light and power.

The fiscal court of Jefferson county, at Louisville, is in the market for a steam pump which will be used in connection with the operation of a plant for softening water used at the county jail. Address County Judge Muir Weissinger.

Plans have been filed with the New York building department for making alterations to the power house of the New York Edison Co., at 171 West 107th street. The estimated cost is $15,000. W. Weissenberger Jr. is the architect.

The Pioneer Coal Co., organized by Louisville capitalists, including M. M. Bardwell and J. P. Speed, will build a power plant for the operation of its coal properties in Bell county, Ky. C. S. Neal is in charge of the installation of the equipment, which will be purchased in the near future.

The Consumers' Ice & Cold Storage Co., Lexington, Ky., has announced plans for the erection of a $200,000 plant for manufacturing ice and generating light and power. Work will be begun as soon as a site can be secured. The company, of which T. B. Satterwhite is president, now has an ice factory in operation.

The city council of Milwaukee has passed a resolution recommending that $6,000 be appropriated for engaging engineers for preliminary work on the new municipal lighting plant. Recommendations have been made that low pressure turbines and electric generators to cost about $60,000 be installed at the garbage incinerator plant, using steam which is now wasted. The electricity is to be used to operate the Menominee river pumping station and the Milwaukee river flushing tunnel.

New equipment will be required by the South Pittsburg Electric Light & Power Co., South Pittsburg, Tenn., the plant of which was recently destroyed by fire. The power equipment was owned by the United States Cast Iron Pipe & Foundry Co. B. J. Alexander, of Nashville, and Charles Houston, of South Pittsburg, are the principal stockholders of the company.

D. Auerbach & Sons, West Thirty-ninth street, New York, manufacturers of candy, will erect a $750,000 factory on Eleventh avenue, between Forty-sixth and Forty-ninth streets. Preliminary plans have been filed which call for a fireproof building, 11 stories high, 200 x 200 feet. Automatic sprinkling and ventilating apparatus will be installed. All machinery will be operated by electricity.

McDonald Bros., Rogersville, Tenn., are organizing a company for the establishment of a hydro-electric power plant on the Holston river near that city. A franchise has been asked of the town council, and following its award work will be begun. The plans of the company involve the construction of an interurban traction line and the transmission of light and power to surrounding sections.

The contract for the steam equipment for the New York state capitol power house has been awarded to Gilles & Georghegan, 537 West Broadway, New York. The contract calls for a return system, connecting the power house, capitol and state education buildings. The successful bid was $202,083. The award covering the electric equipment and connections between the same buildings was made to the Lord Electric Co., 213 West Fortieth street, New York. The contract price is $95,200.

Miscellaneous

The Coca-Cola Co., Eighth avenue near Twenty-fourth street, New York, has bought a plot, 44 x 98 feet, at 330 and 332 Twenty-seventh street, and will erect a factory building for manufacturing coca-cola.

The Alliance Machine Co., Alliance, O., has been awarded a contract through its New York office by the Delaware, Lackawanna & Western Railroad Co., for a gantry crane with bucket attachment, to be shipped to the Binghamton, N. Y., yards of the road.

Contracts have been awarded to the Dravo-Doyle Co., Pittsburg, for

pumping equipment at St. Louis, Mo., and Evansville, Ind. The former installation will include two 40,000,000-gallon centrifugal pumps and the Evansville contract involves four 15,000,000-gallon pumps with steam turbine drive.

The Citizens Light, Heat & Power Co., Johnstown, Pa., is making some additions to its plant and has awarded a contract to R. W. Oswald, Pittsburg representative of the Pennsylvania Boiler Works, Erie, Pa., and the Nagle Engine Co. for a pair of high speed engines to be direct connected to a fan.

The Canadian Northern railway has let contracts for the construction of the line between Sellwood Junction and Port Arthur, Can., a distance of 551 miles, to Foley Bros., St. Paul, and the Northern Construction Co., Winnipeg. Much contractor's equipment will be needed. A number of bridges and viaducts will be erected.

R. R. Owens, consulting engineer, Beaver Falls, Pa., has awarded a contract to Chandley Bros., Beaver Falls, Pa., for improvements to the municipal pumping station at Aliquippa, Pa., which includes the installation of a 90-horsepower, twin-cylinder pumping engine to be furnished by the Bessemer Gas Engine Co., Grove City, Pa.

The Bluegrass Phosphate Co. is being organized at Centreville, Tenn., for the development of phosphate beds in that section, and a capitalization of $200,000 will be provided. A. H. Grigsby, Centreville, G. W. Killebrew, Mt. Pleasant, Tenn., and others are interested in the work, which will involve the installation of a large amount of machinery.

A large plot has been bought by the Midland Linseed Oil Co., Minneapolis, Minn., at Edgewater, N. J., and a large plant will be erected for manufacturing linseed oil. The property has a frontage of 1,500 feet on the Hudson river opposite 110th street, New York, and, with improvements, will represent an outlay of about $1,000,000. It is understood that plans are now being prepared for the buildings that will be erected, and the purchase of a large amount of machinery is under consideration. When completed, a force of 1,000 men will be employed.

Government News

Naval Supplies.

The bureau of supplies and accounts, Navy department, Washington, D. C., will open bids Aug. 8, for furnishing the following material for delivery at naval stations as indicated, and more fully described in the schedules enumerated:

Blades, hacksaw, 10,800; Boston, 3786.
Drills, twist, miscellaneous, Boston, 3786.
Drills, twist, miscellaneous, Brooklyn, 3786.
Taps and dies, pipe, 8 sets, Norfolk, 3786.
Steel, bar, rivet, 35,500 pounds, Brooklyn, 3785.
Steel, sheet, black, 14,800 pounds, Washington, 3792.
Steel, sheet, galvanized, 25,000 pounds, Washington, 3782.
Pipe, brass, 4,500 pounds, Boston, 3787.
Pipe, copper, 8,020 pounds, Portsmouth, N. H., 3787.
Valves, reducing, miscellaneous, Washington, 3782.

August 22.

Bolts and nuts, steel, 3,600 pounds, Mare Island, 3792.
Bolts and nuts, steel, semi-finish, miscellaneous, Mare Island, 3798.
Drills, twist, miscellaneous, Mare Island, 3792.
Files, miscellaneous, Mare Island, 3792.
Nuts, steel, cold pressed, 6,000 pounds, Mare Island, 3792.
Rivets, steel, miscellaneous, Mare Island, 3792.
Screws, machine, miscellaneous, Mare Island, 3792.
Screws, wood, miscellaneous, Mare Island, 3792.
Brass, rod, 5,500 pounds, Mare Island, 3797.
Brass, sheet, 2,200 pounds, Mare Island, 3797.
Bronze, manganese, 35,000 pounds, Mare Island, 3797.
Steel, bar, Class A, 6,000 pounds, Puget Sound, 3797.
Steel, billet, 6,000 pounds, Mare Island, 3793.
Steel, medium, plate, black, 48,000 pounds, Puget Sound, 3793.
Steel, sheet, corrugated, galvanized, 4,500 pounds, Mare Island, 3793.
Cocks, brass, bibb, miscellaneous, Mare Island, 3796.
Pipe, cast iron, miscellaneous, Mare Island, 3790.
Pipe, wrought iron or steel, black, miscellaneous, Mare Island, 3793.
Pipe, wrought iron, 17,500 pounds, Mare Island, 3790.
Valves, gate, composition, 129, Mare Island 3796.
Valves, composition, miscellaneous, Mare Island, 3796.

August 29.

Cupola, iron melting, 1, Mare Island, 3780.

Naval Supply Awards.

The following awards have been made by the bureau of supplies and accounts, Navy department, Washington, D. C., for furnishing materials and supplies for various navy yards in the United States:

Opening of May 31.

Schedule 3582, Class 94, 12 frogs for 60-pound rails, St. Julien's Creek, Va., Weir Frog Co., Cincinnati, $190.80.
Schedule 3582, Class 95, St. Julien's Creek, Va., 6 standard gage platform track cars, Ernest Weimer Co., New York, $111.40.

Opening of June 13.

Schedule 3643, Class 120, Washington, 8,000 pounds round commercial brass, Manhattan Brass Co., New York, $126.
Schedule 3643, Class 121, Washington, 7,000 pounds round naval bronze; Scoville Mfg. Co., Waterbury, Conn., $6.1375.
Schedule 3643, Class 122, Washington, 220,200 pounds soft machine steel, Crucible Steel Co., Pittsburg, Pa., $3,071.79.
Schedule 3643, Class 123, Washington, 216,000 pounds galvanized sheet steel. DeForest Sheet & Tin Plate Co., Niles, O., $0.02545.
Schedule 3749, Class 177, Portsmouth, Boston, Brooklyn, Philadelphia, Norfolk and Charleston, globe valves; Fairbanks Co., Washington, $9,447.64.
Schedule 3651, Class 182, Boston, Brooklyn, Philadelphia, Norfolk and Charleston, seamless brass and copper iron pipes; Cuyler & Mocller, Baltimore, $7,594.24.

Opening of June 20.

Schedule 3633, Class 41, Brooklyn, one steel car, Universal Supply Co., New York, $1,347.15.
Schedule 3660, Class 73, Newport, machine tools; Manning, Maxwell & Moore, New York, $235.
Schedule 3663, Class 106, Newport, 10,765 pounds Tobin bronze rod; Bridgeport Brass Co., Bridgeport, Conn., $1,821.28.
Schedule 3669, Class 201, Philadelphia, 100 tons pig iron, Matlock & Bates, Philadelphia, $15.30 per ton.
Schedule 3669, Class 202, Philadelphia, 100 tons pig iron; Berry & Aikens, Philadelphia, $15.24 per ton.
Schedule 3669, Class 205, Brooklyn, 3055 pounds steel bar; Carnegie Steel Co., Philadelphia, $59.29.
Schedule 3669, Class 206, Brooklyn, 8,000 pounds wrought iron; Carter Iron Co., Washington, $0.07.
Schedule 3669, Class 208, Philadelphia, seamless cold-drawn steel tubing; National Tube Co., Pittsburg, $541.80.
Schedule 3669, Class 209, Philadelphia, 5,000 pounds brass seamless tubing: A. P. Swayer, Philadelphia, $24.97.

Opening of June 27.

Schedule 3690, Class 135, Brooklyn, 5,000 pounds medium bar steel; Carnegie Steel Co., Philadelphia, $84.59.

Opening of July 5.

Schedule 3675, Class 14, Mare Island, steel castings: Federal Steel Foundry Co., Chester, Pa., $5,895 bid B.
Schedule 3700, Class 51, Philadelphia, 300 chest locks: Rudolph & West, Washington, $112.32.
Schedule 3700, Class 52, Philadelphia, miscellaneous drills: Rawles-Cobb Co., Boston, $298.87.

Canal Commission Awards.

Awards for supplies for the Panama canal have been made by the general purchasing officer as follows:

Under Circular 628, opening of May 10, track material, iron, steel, United States Steel Products Co., N. Y., alternate bid on Class 29, $23,947.
Classes 1, 2 and 9 of the same opening have not yet been awarded.
Under Circular 636-D, opening of July 11, brass bolts, nuts, screws, etc., St. Louis Screw Co., St. Louis, Mo., $0.275 per pound.
The contract for installing a coal and ash-handling plant in the old postoffice department, Washington, D. C., has been awarded to R. H. Beaumont Co., Philadelphia, at $5,317.
The contract for furnishing two 35 H. P. simple automatic valve engines for delivery at Ft. Caswell, N. C., has been awarded to the Harrisburg Foundry & Machine Co., of Harrisburg, Pa.

Bids were opened July 18, by the Isthmian Canal Commission, Washington, D. C., under circular 635, for furnishing and delivering steel rails as follows:

1,800 gross tons of 70-pound Bessemer steel rails: R. C. Hoffman & Co., Baltimore, $31.35 per ton; U. S. Steel Products Co., New York, $32.25.
If open-hearth rails are used instead of Bessemer: Bethlehem Steel Co., South Bethlehem, Pa., $31.35; R. C. Hoffman & Co., Baltimore, Md., $32.90; United States Steel Products Co., New York, $33.
If seconds are used instead of Bessemer or open-hearth steel rails: Bethlehem Steel Co., South Bethlehem, Pa., $29.78; R. C. Hoffman & Co., Baltimore, $30.90.
The prices on 1,250 gross tons of 90-pound Bessemer or open-hearth steel rails (Class 2) are the same as those on 1,800 gross tons of rails, and the time of delivery is 50, 60 and 45 days, respectively.

Reclamation Canal.

Proposals will be received at the office of the U. S. reclamation service, Provo, Utah, until 2 p. m., Aug. 7, for the construction of about five miles of canal located approximately 35 miles northeast of Thistle, Utah. The work involves the excavation and placing of about 145,000 cubic yards of material. Particulars can be obtained from the reclamation service at Washington, D. C., and Provo, Utah.

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers

The Halo Gas Co., Nashville, Tenn.; $4,500; to manufacture gas appliances; by J. M. Williams, A. J. White and others.

The Railway & Automobile Grease Cup Co., Terre Haute, Ind.; $75,000; by G. J. Thompson, R. R. Armstrong and O. L. Brown.

Lakeside Forge Co., Erie, Pa.; $100,000; by Frederick Bell McBrier, Alexander Jarecki and Frederick A. Brevillier, all of Erie, Pa.

The Aluminum Foundry Co., Sebring, O.; $20,000; by Frederick Bauch, George Bauch, Mary K. Bauch, F. C. Bauch and S. H. Hommell.

The Mathes Spring Co., Toledo, O.; $100,000; by Gordon M. Mathes, Robert C. McKeigan, Rathbun Fuller, G. C. Cunningham and Richard D. Logan.

The Cleveland Trolley Wheel Co., Cleveland; $50,000; by C. E. Beam, L. L. McAdams, C. W. Hartley, William H. Thompson and Charles Ammerman.

Art Brass & Fixture Mfg Co., Pittsburg; $100,000; by L. M. Fluhart, John A. Irwin, Scott Hayes, C. P. Davis and L. R. Jeffords, all of Pittsburg.

The Adams Fire Fighting & Instrument Co., Louisville, Ky.; $100,000; to manufacture fire extinguishers; by C. M. Pate, of Louisville, D. W. Adams and P. C. Johnson.

The Chevrolet Motor Co., Detroit, Mich.; $750,000; to manufacture automobiles and accessories; by W. C. Durant, William H. Little and Louis Chevrolet, all of Detroit.

Interstate Pattern Co., Cleveland; $10,000; to manufacture patterns, dies and carvings; by Albert R. Roethlisberger, H. G. Arthur, H. F. Pratt, F. J. Zurlinden and D. D. Grigor.

Quick & Thomas Co., Auburn, N. Y.; $50,000; to manufacture and deal in boilers, machinery, etc.; by Charles B. Quick, Cecil A. Thomas, and Harry A. Fitzwalter, all of Auburn, N. Y.

J. A. Seitz Co., Syracuse, N. Y.; $50,000; to manufacture motors, engines, etc.; by Jacob A. Seitz, Bessie M. Seitz, and Jessie W. Seitz, all of 1231 South Salina street, Syracuse, N. Y.

Grafton Electric Construction Co., Grafton, W. Va.; $6,000; to manufacture electrical supplies; George L. Abbott, W. F. Faust, John F. Cavaney, and William Archdeacon, all of Grafton.

Fisher-Sweeny Bronze Co., Hoboken, N. J.; $20,000; to deal in bronze, steel, copper, brass, etc.; by Edward J. Sweeny, Newark, N. J.; Christian J. C. Fischer and Ludwig A. J. Fischer, Montclair, N. J.

The East Texas Brown Ore Development Co., Port Bolivar, Tex.; $2,500,000; to mine and develop iron ore holdings and to operate iron and steel works; by L. P. Featherstone, L. C. Luckel and Fox Winnie.

Front Drive Motor Co., North Tonawanda, N. Y.; $50,000; to manufacture engines, motor trucks, machinery, electrical appliances, etc.; by Walter Christie and Frank J. Alder, 116 Eleventh avenue, and William A. Fleming, 35 Nassau street, all of New York City.

Pearlman Co., Inc., Manhattan, New York City; $150,000; to smelt, refine and deal in metals; by Sidney V. Bernheim, 225 West Ninetieth street, Sidney V. Hirsh, 209 East Fifty-seventh street, and Walter Loewenthal, 50 West Eighty-fifth street, all of New York City.

Continental Tunnel Machine Co., Manhattan, New York City; $100,000; to manufacture machinery, engines, etc.; by John J. McElhinny, 34 West 129th street, Andrew J. J. McElhinny, 34 West 129th street, and Robert D. Eggleston, 307 West 158th street, all of New York City.

Gardner Matthews Automobile Mfg. Co., Manhattan, New York City; $100,000; to manufacture motors, motor vehicles, etc.; by Robert E. Matthews, 2304 Broadway, New York City; Jacob W. Pascon, 62 Thorpe avenue, Brooklyn, and Mary D. Schneer, 103 Second avenue, New York City.

New Process Steel Corporation, Lancaster, Pa.; $50,000; by Samuel O. Martin, New Holland, Pa., Samuel Martin, Kinzer, Pa., Aaron B. Harnish, West Willow, Pa., George D. Lefever, Lancaster, Pa., Amos K. Whitner, Ronks, Pa., and H. L. McClure and W. A. Sherwood, Lancaster, Pa.

Rochester Steel Castings Co., Rochester, N. Y.; $50,000; to manufacture and deal in steel castings, foundry machines and supplies; by Fred C. Kimmel, P. V. Crittenden, I. C. Emery, Henry C. Caldwell and William Deininger, all of Rochester; George A. Thompson, of Baltimore, and James P. Fleming, of Charlotte, N. Y.

New Construction

Finlayson & Son, of Sistersville, W. Va., are planning to erect a machine shop at Tulsa, Okla., the first unit of which will be two stories, of brick, 50 x 146 feet. Other buildings will be added later.

The Rummel Machine Screw Co., Cleveland, will build an addition to its shops on Keyes avenue, one-story, of brick and steel, 35x120 feet. The general construction contract has been awarded.

The Central Construction Co., of Lexington, Ky., has been awarded a contract for laying eight miles of pipe from Louisville to Lakeland. It is mostly 16, 12 and 8-inch. The contract price is $61,700.

A bridge is to be built over the river at Chattanooga, Tenn. The estimated cost is $400,000. The selection of a site, discussion regarding which has delayed the beginning of work, has now been completed.

The Lanston Monotype Machine Co., Philadelphia, has had plans prepared for a plant which it will erect at Twenty-fourth and Locust streets, that city. It will be a six-story and basement concrete and brick structure, 176 x 268 feet in dimensions and will cost about $250,000.

The Ironton Punch & Shear Co., Ironton, O., which took over the business of the Cincinnati Punch & Shear Co., has secured a permit to erect a modern steel building for manufacturing purposes, running through from Aetna to Hecla streets. The erecting contract has been awarded to the Riverside Bridge Co.

The United Iron Works Co., whose

Springfield, Mo., plant was badly damaged by fire some days ago, is having plans drawn for a new plant. It is not expected that active construction work will be undertaken until next spring. In the meantime the company is planning to start its Sterling works to care for the business in addition to operating its Aurora, Mo., works with additional equipment.

Final arrangements have been made for the construction of the 18-story office building of the Inter-Southern Life, at Louisville, Ky. Buildings now on the site are to be razed at once. The structure will have a steel frame and will require about 1,000 tons of structural material. B. B. Davis, of Louisville, is now preparing specifications.

The Beaver Dam Mfg. Co., Beaver Dam, Wis., has made additions to its plant consisting of a store room, 60 x 168 feet, and a machine shop, 60 x 168 feet. The company is also installing several new machines such as a bull-dozer, cushion hammer, drop hammer, etc. It is preparing to manufacture between 6,000 and 7,000 machines the coming season, consisting mostly of single and double disc drills and seeders.

General Industrial

The Woods Machine Co., Chicago, has increased its capital stock from $5,000 to $10,000.

The Bay View Foundry Co., Sandusky, O., has increased its capital stock from $40,000 to $75,000.

At a special meeting of the stockholders of the Allegheny Steel Co., Pittsburg, July 6, it was decided to increase the capital stock from $3,000,000 to $3,500,000.

The G. Mathes Iron & Metal Co., St. Louis, advises that the damage from fire recently sustained was of little consequence, a shed being burned and some machinery slightly damaged.

The Computing Tabulating-Recording Co., New York, has increased its capital stock from $500 to $12,000,000. The certificate of increase is signed by Percy H. Brandage, Frederick H. Allen and Walter Haviland.

The Des Moines Bridge & Iron Co., through President E. W. Crellin, has again declared its purpose to adhere to the open shop policy at its Des Moines shops, employing competent workmen without regard to affiliation with labor organizations of any sort.

Shareholders of the Standard Pressed Steel Co., Philadelphia, will hold a special meeting, Aug. 26, to vote on a proposed increase in capital stock from $100,000 to $175,000. The additional stock will consist of $35,000 preferred and $40,000 common stock.

The Amalgamated Association of Iron, Steel & Tin Workers has received signed wage scales for a total of 49 plants, including 12 mills identified with the Western Bar Iron Association. Practically all companies dealing with the United Sons of Vulcan have signed the wage scale of this association.

The West Allis Iron Works, Milwaukee, which recently increased its capital stock from $10,000 to $25,000, advises that it has done so in order to absorb its surplus subscriptions. No new equipment will be needed at present. The company manufactures high grade iron castings, its capacity being up to 15 tons per day.

Following complete refinancing, the Chattanooga Iron & Wire Works, Chattanooga, Tenn., with a capital of $25,000, has been dismissed from the receiver's court and will again conduct its business independently. The officers now are as follows: President and treasurer, T. C. Green; secretary, J. E. Morelock; sales manager, R. C. Lieb.

The Novelty Tool Co., North Vernon, Ind., whose incorporation has been recently noted, is manufacturing a combination tool that can be used for seven purposes, viz., an anvil, a vise, a pipe vise, a drill, a wire stretcher, a fence post lifter and a wagon jack. The company advises that no new equipment will be needed at present.

The new plant of the George M. Mason Engineering & Mfg. Co., West Middlesex, Pa., is about completed. The company will manufacture a new type of house heater. Joseph Metz is vice president and superintendent of the plant. Other officers are: President, Frank W. Large; secretary, William E. Elliott, and treasurer, Charles Pierce.

The Phoenix Die Casting Co., 21 Illinois street, Buffalo, whose incorporation was recently noted, advises that it has tripled its manufacturing capacity over what it was one year ago, and together with its hard composition die casting it has added an extensive engine bearing die casting department. The president of the Phoenix company is Henry H. Betcher.

At a recent meeting of the directors of the Sessions Foundry Co., Bristol, Conn., William E. Sessions, who has held the offices of president and treasurer, relinquished the office of treasurer in favor of his son, Joseph B. Sessions. Mr. Sessions' other son, William K. Sessions, was elected vice president, an office which has been held by Joseph Sessions, the newly elected treasurer. The secretary of the company is Arthur F. Woodford.

The Art Brass & Plating Works, Louisville, Ky., recently incorporated, advises that it has taken over the equipment and good will of the Apex Mfg. Co., of that city, the latter company having lately been dissolved. The new company's products will include specialties and plumbing supplies. Additions to its foundry equipment and machine shop will be made. The officers of the new company are: President, Otto Seelbach; vice president, Carl Rindt; secretary-treasurer, Louis Rindt, and general manager, W. L. Heady.

Trade Notes

The Cleveland Steel Co., Cleveland, has opened a suite of offices on the seventh floor of the Rockefeller building, that city.

The Pacific coast agents of the Cutler-Hammer Mfg. Co. of Milwaukee, Otis & Squires, have established a branch office in Portland, Oregon, No. 229 Sherlock building. G. L. Priest is in charge.

The Lake Erie Nail & Supply Co., 412 Frankfort avenue N. W., Cleveland, has organized a department to handle iron working and wood working machinery and is open for good lines of both kinds of machinery. It expects to put in a stock at its present quarters, 408-412 Frankfort avenue, at an early date. This department will be in charge of a competent machinery man. The Lake Erie company has also arranged with the Oriental Emery Co., of New Haven, Conn., to represent it in the Cleveland territory, carrying a complete stock of the Oriental company's pure Turkish emery and thus making possible prompt deliveries.

Fires

The shops of the Columbia Gray Iron Co., Columbia, Pa., were badly damaged by fire July 14, the loss being placed at $25,000. The foundry itself escaped damage. The fire was believed to be of incendiary origin. The adjoining works of the Keeley Stove Co. were saved by a fortunate shifting of the wind.